

# Yongho Sohn, Ph. D.

Professor

and AMPAC Associate Director of Materials Characterization Facility

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## RESEARCH and TEACHING INTERESTS

- Diffusion in Solids, Materials Kinetics, Multicomponent Intrinsic and Interdiffusion in Multiphase Alloys including Phase-Field Simulation
- Thermal Barrier Coatings and Protective Metallic/Ceramic Coatings, Oxidation, Hot Corrosion and Other Environmental Degradation in Gas Turbines
- Thermotransport and Irradiation-Enhanced Diffusion in Research and Next-Generation Nuclear Fuels and Claddings
- Kinetic Energy Materials and Superlight-Weight Metal-Matrix Composites
- Processing, Microstructure and Property Relations in Materials, Materials Characterization, Physical Metallurgy, Phase Transformations and Materials Thermodynamics

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**Note:** All citation records based on Thomson-Reuters database.

## SYNOPSIS OF PROFESSIONAL, SCHOLARSTIC AND SERVICE ACHIEVEMENTS

- **Secured Nearly \$5M (with Splits) in External Research Contracts/Grants Mostly as a PI since January, 2001.**
  - ✓ NSF-CAREER Award (2003-2008) and Current NSF Grant (DMR-1106219)
  - ✓ 3 USDOE University Turbine Systems Research (UTSR) Grants
  - ✓ Numerous USDOE contracts through Idaho National Laboratory (INL), Oak Ridge National Laboratory (ORNL), Army Research Laboratory (ARL) and its Subcontractors
  - ✓ NASA-Aeronautics Research Mission Directorate: State of Florida Turbine Initiative
  - ✓ Industrial Funding and Partnership: Siemens Power Generation, Mitsubishi Power Systems, Solar Turbines Incorporated, Pratt & Whitney, General Electric Aircraft Engines and Global Research, DWA Aluminum Composites Company, Howmet Research Corporation, Lockheed-Martin Missiles and Fire Control, Magnesium-Elektron, Surmet Corporation.
- Technical Collaboration with National Laboratory: National Institute of Standard and Technology, NASA-Glenn Research Center, Idaho National Laboratory, Argonne National Laboratory, Oak Ridge National Laboratory, National Institute of Materials Science (Japan).
- **Faculty Excellence Award (Full-Professor Level) in Research, 2011**, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida
- **Teaching Incentive Program Award, 2007 and 2013**, University of Central Florida
- **Research Incentive Award, 2006 and 2012**, University of Central Florida
- **Distinguished Researcher Award, 2005**, Division of Research, University of Central Florida.
- **Over 100 Journal Publications (Cited over 1,400 times; h index = 20) and Over 50 Conference Proceedings**
- Over 80 Invited and 250 Contributed Presentations at National and International Conferences, Workshops, Universities and Research Institutes/Laboratories.
- Authored a Book Chapter on Smithells Metals Reference Book, the Oldest and the Largest-Circulation Reference Book on Metallurgy and Materials Engineering
- **Currently Supervise and Support 5 Ph.D. (1 qualified) and 4 M.S. Graduate Research Assistants**
- Supervised, Supported and Graduated 25 M.S. and 7 Ph.D. Students
  - ✓ Supervised Miss Ashley Ewh, *M.S. Thesis of the Year*, 2013, University of Central Florida
  - ✓ Supervised Mr. Balaji Jayaraj, *M.S. Thesis of the Year*, 2004, University of Central Florida
- Sponsored/Supervised 7 Post-Doctoral Fellows and 8 International Visiting Professor
- Supervised and Supported 25 Undergraduate Research Assistants
  - ✓ 10 Entered Graduate Programs (6 at UCF, 1 at Georgia Tech, 1 at RPI, 1 at VTech and 1 at Purdue)
- Supervised 2 NSF-REU Fellows through NSF-REU Program
- **Excellence in Teaching Evaluation, both Undergraduate and Graduate Courses**
- **ABET Coordinator for Engineering Core EGN 3365 – Structures and Properties of Materials**
- **AMPAC Associate Director for Materials Characterization Facility:** technical management for major analytical equipments (~\$20M), personnel management for 3 full-time staff engineers, fund-raising for equipment acquisition, financial management related to internal and external users, and equipment service contracts/maintenance.
- **Associate Editor of *Journal of Phase Equilibria and Diffusion***, Published by Springer, ISSN: 1547-7037
- **Editorial Board Member of *Defects and Diffusion Forum***, Published by Trans-Tech Publication Incorporated, ISSN: 1012-0386.
- Vice Chair of Alloy Phase Diagrams Committee, ASM International
- Member of High Temperature Materials Committee, TMS/ASM International
- Member of Academic Advisory Board, USDOE University Turbine Systems Research
- Numerous International Conference Organizations and Session Chairmanships for TMS, ACerS, ASM International, MS&T, AVS
- Chairman, ASM International Central Florida Chapter, 2002-2004; featured on “Nexus” for the Rejuvenation of Central Florida Chapter.
- Faculty Fellow and Member of Advisory Board at Faculty Center for Teaching and Learning (FCTL).
- Member of University Radiation Safety Committee, University of Central Florida, 2006-Present.
- Served as a Chairman of Faculty Search Committee and Faculty Promotion and Tenure Committee.
- Served as a member of various university, college, and department committees.

## ACCOMPLISHMENT HIGHLIGHTS IN RESEARCH AND SCHOLARSHIP

### M.S. Thesis (Worcester Polytechnic Institute), 1991-1993

- Investigation of processing-structure relation for electron beam physical vapor deposited zirconia-based thermal barrier coatings: *Thin Solid Films*, 250 (1994) 1, cited **39** times; *Journal of Materials Engineering and Performance*, 3 (1994) 55, cited **32** times.

### Ph.D. Dissertation (Purdue University), 1994-1998

- Development of a new analysis technique to determine average ternary interdiffusion coefficients from single diffusion couple experiments: *Scripta Materialia*, 35 (1996) 683, cited **24** times; *Metallurgical and Materials Transactions*, 30 (1999) 535, cited **62** times; *Journal of Nuclear Materials*, 279 (2000) 317, cited **16** times; *Metallurgical and Materials Transactions*, 33 (2002) 3375, cited **14** times; *Acta Materialia*, 48 (2000) 1427, cited **13** times.

### Post-Doctoral Scholar (University of Connecticut), 1999-2000

- Development and implementation of plasma sprayed nanostructured ceramic coatings: *Surface and Coatings Technology*, 146 (2001) 48, cited **154** times; in *Materials Science and Engineering A*, 301 (2001) 80, cited **142** times; *Acta Materialia*, 50 (2002) 1141, cited **104** times.
- Investigation of failure mechanisms of various thermal barrier coatings by microstructural analysis: *Surface and Coatings Technology*, 121 (1999) 53, cited **70** times; 146 (2001) 70, cited **64** times; 176 (2003) 57, cited **29** times.
- Development of photostimulated luminescence spectroscopy as a non-destructive inspection technique for thermal barrier coatings: *Surface and Coatings Technology*, 146 (2001) 102, cited **35** times; *Materials Science and Engineering A*, 291 (2000) 68, cited **32** times; *Metallurgical and Materials Transactions A*, 31 (2000) 2388, cited **15** times.

### Faculty (University of Central Florida), since 2001

- Development of electrochemical impedance spectroscopy as a non-destructive inspection technique for thermal barrier coatings: *Surface and Coatings Technology*, 177 (2004) 140, cited **28** times; *Materials Science and Engineering A*, 372 (2004) 278, cited **25** times; *Materials Science and Engineering A*, 407 (2005) 213, cited **16** times.
- Correlated microstructure degradation and failure mechanisms/ characteristics of thermal barrier coatings: *Surface and Coatings Technology*, 146 (2001) 132, cited **37** times; *Journal of American Ceramic Society*, 90 (2007) 3601, cited **20** times; *Surface and Coatings Technology*, 177 (2004) 121, cited **18** times; *Surface and Coatings Technology*, 203 (2008) 437, cited **20** times; *Thin Solid Films*, 466 (2004) 128, cited **12** times; *Surface and Coatings Technology*, 177 (2004) 89, cited **13** times; *Surface and Coatings Technology*, 200 (2004) 5869, cited **11** times.
- First experimental observation of three-phase equilibrium (2-D microstructure) in ternary isothermal solid-to-solid diffusion couples: *Metallurgical and Materials Transactions*, 36A (2005) 2361, cited **5** times.
- Collaborative research and development project (various topics)
  - Silicoaluminum Carbonitride; *Advanced Engineering Materials*, 6 (2004) 337, cited **32** times.
  - Platinum Nanoparticle Catalysis; *Catalysis Letters*, 119 (2007) 119, cited **28** times; *Catalysis Letters*, 118 (2007) 1, cited **21** times.
  - Mg-Al-Ca Phase Equilibria; *Scripta Materialia*, 55 (2006) 573, cited **16** times.
  - Modeling of U-Pu-Zr Thermotransport; *Journal of Nuclear Materials*, 327 (2004) 27, cited **14** times.
- Recent accomplishments with quick and multiple citations:
  - Development of phase-field simulation for diffusion under chemical potential and temperature gradient for multicomponent-multiphase alloys; *Journal of Applied Physics*, 106 (2009) 136915; *Journal of Phase Equilibria and Diffusion*, 27 (2006) 676; *Computational Materials Science*, 43 (2008) 301; *Surface and Coatings Technology*, 203 (2008) 407; *Journal of Nuclear Materials*, 414 (2011) 211.
  - Effects of ternary alloying addition on interdiffusion behavior of Ni<sub>3</sub>Al, *Intermetallics*, 16 (2008) 1095; *Journal of Phase Equilibria and Diffusion*, 30 (2009) 246.

- Understanding of residual stress and phase constituents in protective oxide-scale of Ti-Al; *Oxidation of Metals*, 68 (2007) 97.
- Comprehensive understanding of interdiffusion behavior in U-Mo-Al system, *Journal of Nuclear Materials*, 394 (2009) 160; 402 (2010) 8; *Metallurgical and Materials Transactions A*, 42A (2011) 3071; *Journal of Nuclear Materials*, 412 (2011) 90; *Journal of Phase Equilibria and Diffusion*, 31 (2010) 216; *Journal of Alloys and Compounds*, 509 (2011) 9487.
- Investigation of processing-microstructure-properties relations for nano-engineered tri-modal Aluminum metal matrix composites; *Composites Part A*, 41 (2010) 933; *Journal of Materials Science*, 45 (2010) 4871; *Micron* 42 (2011) 29.

## HONORS AND AWARDS

### Major Honors and Awards

- **Teaching Incentive Program Award**, 2013, University of Central Florida
- **Research Incentive Award**, 2012, University of Central Florida
- **Faculty Excellence Award (Full-Professor Level) in Research**, 2011, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida
- **NSF's Faculty Early CAREER Award and Grant**, 2003-2008, Division of Materials Research, National Science Foundation.
- **Teaching Incentive Program Award**, 2007, University of Central Florida
- **Research Incentive Award**, 2006, University of Central Florida
- **Distinguished Researcher of the Year Award**, 2005, University of Central Florida.
- **Research Professor of the Year at Assistant Professor Level**, 2004, Department of Mechanical, Materials and Aerospace Engineering, College of Engineering and Computer Science, University of Central Florida.
- **Member of Diffusion Work Group**, National Institute of Standard and Technology, Gaithersburg, MD

### Travel Grants and Awards

- **ChangJiang Scholar Award** for Innovative Research, 2007, Northwestern Polytechnic University, Xi'an, China.
- **Young Scientist Award**, 2006, National Institute for Materials Science, Tsukuba, Japan.

### Others Recognitions and Noteworthy Services

- **Associate Editor**, *Journal of Phase Equilibria and Diffusion*, Published by Springer, ISSN: 1547-7037.
- **Member of Editorial Board**, *Defects and Diffusion Forum*, Published by Trans-Tech Publication Incorporated, ISSN: 1012-0386.
- **Vice Chair** of Alloy Phase Diagrams Committee, 2009-2011, ASM International
- **Faculty Advisory Board**, 2003~2004, Faculty Center for Teaching and Learning, The University of Central Florida, Orlando, FL
- **Faculty Fellow** Representing College of Engineering and Computer Science, 2002~2003, Faculty Center for Teaching and Learning, The University of Central Florida, Orlando, FL
- **1998 Magoon Awards for Excellence in Teaching**, Purdue University, West Lafayette, IN, USA, (Award for the best teaching assistant voted by undergraduate students)
- **1997 Magoon Awards for Excellence in Teaching**, Purdue University, West Lafayette, IN, USA (Award for the best teaching assistant voted by undergraduate students)
- **Alpha Sigma Mu**, Materials Engineering Honor Society
- Graduation with **Distinction**, Worcester Polytechnic Institute, Worcester, MA, USA

### Student Achievements

- **Miss Ashley Ewh**, UCF's M.S. Thesis of the Year, 2013, University of Central Florida.
- **Mr. Balaji Jayaraj**, UCF's M.S. Thesis of the Year, 2004, University of Central Florida.
- **Dr. Jing Liu**, Sapphire Award of Graduate Excellence in Materials Science, Basic Science Division of The American Ceramic Society, 2006.
- Advisor to **Miss Ashley Ewh**, Recipient of Goldwater Scholarship (2008), Astronaut Scholarship (2008 and 2009), UCF Order of Pegasus (2011), UCF Founders Day Award (2011)

## PROFESSIONAL EMPLOYMENT HISTORY

- Aug., 10 – Present      **Professor**  
 Advanced Materials Processing and Analysis Center and  
 Department of Materials Science and Engineering  
 University of Central Florida  
 Box 162455, 4000 Central Florida Blvd., Orlando, FL 32816-2455
- **Research Activities:** Thermal barrier coatings, Oxidation, Multicomponent Diffusion, Metal Matrix Composites, Metallic Nuclear Fuels, Kinetic Energy Materials, Phase-Field Simulation, Non-Destructive Evaluation, Transmission Electron Microscopy via Focused Ion Beam (see further for detailed activities)
  - **External Funding Sources:** National Science Foundation (NSF), USDOE – University Turbine Systems Research, USDOE - Idaho National Laboratory (INL), USDOD-Army Research Laboratory (ARL), NASA-Aeronautics Research Mission Directorate, Siemens Power Generation, Solar Turbines Incorporated, General Electric Corporate Research and Development, Mitsubishi Power Systems, Lockheed-Martin Missiles and Fire Control, DWA Aluminum Composite Company, Matsys Inc., Surmet Corporation
- June 06 – Present      **AMPAC Associate Director for Materials Characterization Facility**  
 Advanced Materials Processing and Analysis Center  
 University of Central Florida  
 12443 Research Parkway, Suite 305, Orlando, FL 32816
- Administration of University-Wide Facility:
- Technical management for major analytical equipment including scanning electron microscopes (SEMs), transmission electron microscopes (TEMs), focused ion beam (FIB), electron probe microanalysis (EPMA), secondary ion mass spectrometers (SIMS), auger electron spectrometer (AES), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), and Rutherford backscatter spectrometer (RBS).
  - Personnel management for 3 full-time staff engineers.
  - Financial management dealing with internal and external users, and equipment service contracts and maintenance.
  - Fund-raising for instrument acquisitions (Over \$3M for Zeiss Ultra55 FEG-SEM, JEOL 6480LV SEM with EBSD, JEOL 1010B TEM, Zeiss 1540EsB CrossBeam, Critical-Point Drier, Cryo-Microtome)
- Aug., 05 – July 10      Associate Professor (Tenured), University of Central Florida, Ibid.
- June, 06                      Guest Researcher  
 National Institute of Materials Science – Japan  
 High Temperature Materials Center  
 Tsukuba, Ibaraki, Japan
- June 05 – May 06      Assistant Director, Materials Characterization Facility, University of Central Florida, Ibid.
- Jan., 01- July 05      Assistant Professor, University of Central Florida, Ibid.
- Dec., 98-Nov., 99      Post-Doctoral Research Fellow, University of Connecticut, Storrs, CT, U.S.A.  
 Project : Development of Laser Fluorescence as a Non-Destructive Inspection Technique for Thermal Barrier Coatings, Funded by UDDOE: Advanced Gas Turbines Systems Research (AGTSR #99-01-SR073)  
 Proeject : Nanostructured Coatings for Wear and Thermal Applications  
 Funded by Office of Naval Research (ONR N00014-98-C0010)
- Nov., 96-Nov., 98      Research Assistant, Purdue University, West Lafayette, IN, U.S.A.  
 Project : Radiation-enhanced Interdiffusion in Nuclear Dispersion Fuels  
 Funded by Argonne National Laboratory (ANL), Argonne, IL, U.S.A.

- Feb., 98-Jul., 98 Graduate Engineering Assistant, Technical Assistant Program, Purdue University, West Lafayette, IN, U.S.A.
- Jun., 95-May 97 Research Assistant, Purdue University, West Lafayette, IN, U.S.A.  
Project : Interdiffusion and Microstructural Stability of Fe-Ni-Al Alloys  
Funded by Purdue Research Foundation, West Lafayette, IN, U.S.A.
- Aug., 94-Dec., 97 Recitation Instructor and Laboratory Instructor  
School of Materials Engineering Purdue University, West Lafayette, IN, U.S.A.
- Sept., 93-Mar., 94 Private and Tennis Instructor, Korean Armed Forces, Korea
- Jun., 92-Jun., 93 Research Assistant  
Materials Engineering, Worcester Polytechnic Institute, Worcester, MA, U.S.A.  
Project : Physical Vapor Deposited Thermal Barrier Coatings (PVD-TBCs)  
Funded by General Electric Aircraft Engine Group, Cincinnati, OH, U.S.A.
- Aug., 91-May, 92 Teaching Assistant and Laboratory Instructor  
Materials Engineering, Worcester Polytechnic Institute, Worcester, MA, U.S.A.

### EDUCATIONAL BACKGROUND

- Aug., 94 - Dec., 98 Doctor of Philosophy in Materials Science and Engineering  
  
Purdue University, West Lafayette, IN, U.S.A.  
Thesis: Interdiffusion Fluxes and Transport Coefficients Under Multiple Gradients in Selected Ternary Systems  
Prelim: Effects of Structural Characteristics and Solute Segregation on Grain Boundary Diffusion of Metals
- Aug., 91-May, 93 Master of Science in Materials Science and Engineering  
  
Worcester Polytechnic Institute, Worcester, MA, U.S.A.  
Thesis: Characterization and Life Prediction of Physical Vapor Deposited Partially Stabilized Zirconia Thermal Barrier Coatings
- Aug., 87-May, 91 Bachelor of Science in Mechanical Engineering with Distinction  
  
Worcester Polytechnic Institute, Worcester, MA, U.S.A.  
Major Qualifying Project: Vibratory Casted Ceramics  
Interactive Qualifying Project: Perspective in Research, Development and Use of Intergrated Services Digital Network in the Republic of Korea

## RESEARCH GRANTS and AWARDS (Currently Active in Red)

### External

1. **Y.H. Sohn**, "Out-of-Pile Testing to Support Reduced Enrichment for Research and Test Reactors Fuel Development," US Department of Energy (DOE) – Idaho National Laboratory (INL), ID, 2013-Present, \$235,224.
2. **Y.H. Sohn**, "Advanced Materials Design and Innovative Processing Development," US Department of Defense (DOD) - Army Research Laboratory (ARL), Aberdeen Proving Ground, 2011-2015, \$655,037.
3. **Y.H. Sohn**, "Microstructural and Compositional Evolution during Fluidized Degassing Process for Development of Nanostructured, Lightweight Composite Powders," Matsys Corporation, Sterling, VA, 2013-2015, \$120,555.
4. P. Schelling, **Y.H. Sohn**, "Multiscale Simulation and Experimentation Study of Thermotransport in Binary Alloys," Division of Materials Research (DMR-1106219), National Science Foundation (NSF), Arlington, VA, 2011-2014, \$390,000.
5. **Y.H. Sohn**, "Advanced Test Reactor – National Scientific User Facility Program: Low Fluence Behavior of Metallic Fuels (ATR-NSUF Bridge Program Fund, \$82,874)" US Department of Energy (DOE) – Idaho National Laboratory (INL), ID, 2010-Present.
6. **Y.H. Sohn**, K.R. Coffey, "Diffusion and Microstructural Evolution of The Fuel-Cladding Interaction," US Department of Energy (DOE) – Idaho National Laboratory (INL), ID, 2009-Present, \$349,856.
7. D. Britt, P. Schelling, **Y.H. Sohn**, T. Bradley, K.D. Belfield, "Catalyzed Production of Organic Molecules on the Surfaces of Asteroids," Florida Space Institute, Orlando, FL, 2013-2014, \$48,984.
8. **Y.H. Sohn**, "Diffusion Barrier for U-Mo Nuclear Fuels Cladded with Al Alloys," US Department of Energy (DOE) – Idaho National Laboratory, ID, 2007-2013, \$511,657.
9. **Y.H. Sohn**, "Microstructural Development of Metallic Alloys with Novel Processing Techniques," Worcester Polytechnic Institute, Worcester, MA, 2013, \$15,000.
10. **Y.H. Sohn**, "Microstructural Characterization of Magnesium Powders and Composites via Cryomilled Process," Hart Metals, Tamaqua, OH, 2011-2013, \$40,000.
11. **Y.H. Sohn**, "Tracer, Intrinsic and Interdiffusion Study in Mg-Alloys," US Department of Energy (DOE) – Oak Ridge National Laboratory, TN, 2011-2012, \$38,688.
12. **Y.H. Sohn**, "Thermotransport in U Alloys for Transmutation in Fast Reactors," US Department of Energy (DOE) – Idaho National Laboratory (INL), ID, 2011-2012, \$58,998.
13. **Y.H. Sohn**, K. Coffey "Tracer Diffusion Coefficient Measurement for Mg-Alloys," US Department of Energy (DOE) – Oak Ridge National Laboratory, TN, 2008-2011, \$140,330.
14. **Y.H. Sohn**, H. Heinrich, "Microstructural Characterization of Superlightweight Nanoengineered Aluminum-based Composites for Armor Applications," The DWA Company, Chatsworth, CA, 2008-2011, \$454,204.
15. **Y.H. Sohn**, "Algal Biofuel for Aviation: Compatibility in Hot Section Materials and Coatings," US Department of Defense (DOD) – Air Force Research Laboratory (ARL) Subcontract through New Mexico State University, Las Cruces, NM, 2010-2011, \$70,717.
16. **Y.H. Sohn**, C. Xu and J. Kapat, "Phase-Field Modeling and Experimentation of Thermotransport in U-Alloys for Transmutation in Fast Reactors," US Department of Energy (DOE) – Idaho National Laboratory (INL), ID, 2008-2011, \$265,000.
17. **Y.H. Sohn**, "Microstructural Understanding of Severe Plastic Deformation in Mg-Alloys," Magnesium-Elektron North America, Inc., Madison, IL, 2010-2011, \$50,000.

18. **Y.H. Sohn**, "Microstructural Evolution in SiC<sub>p</sub> Reinforced Aluminum Metal-Matrix Composites," MC21 Incorporated, Carson City, Nevada, 2009 – 2011, \$125,000.
19. **Y.H. Sohn**, "Next Generation Lightweight Metal Matrix Composites," Magnesium-Elektron North America, Inc., Madison, IL, 2010-2011, \$10,000.
20. **Y.H. Sohn**, Bo Yao, "Focused Ion Beam Specimen Preparation," U.S. Department of Energy (DOE) – Argonne National Laboratory, Argonne, IL, 2011, \$6,000.
21. **Y.H. Sohn**, "Development of Prime Reliant Thermal Barrier Coatings via Phase Field Modeling and Experimental Validation," Florida Center for Advanced Aero-Propulsion (FCAAP), 2008-2011, \$99,914.
22. **Y.H. Sohn**, "Effects of Alloying Additions on the Interdiffusion Behavior of U-Mo Alloys in Al Matrix," US Department of Energy (DOE) – Idaho National Laboratory, ID, 2006-2010, \$235,287.
23. **Y.H. Sohn**, "Development, Evaluation and Characterization of Thermal Barrier Coatings for DGT-5," Doosan Heavy Industries, Seoul, Korea, 2008-2010, \$126,726.
24. **Y.H. Sohn**, "Investigation of Precipitation Hardening Process in Copper Alloys for Rotor Applications," Siemens Power Generation, Orlando, FL, and Florida High Tech Corridor, \$66,667, 2009-2010.
25. **Y.H. Sohn**, "Assessment of Temperature and Time Dependent Properties of Thermal Barrier Coatings," PSM-Alstom, Jupiter, FL, 2009, \$5,000.
26. **Y.H. Sohn**, K. Scammon, "Oxide Scale Retention for Microstructural Analysis of Ni-base Superalloys," General Electric Energy, Schenectady, NY, 2009, \$7,000.
27. **Y.H. Sohn**, K. Scammon, "Acquisition of Critical Point Drier for Characterization of Materials in Biology and Medicine," Neurosurgery and Florida High Tech Corridor, \$13,000.
28. **Y.H. Sohn**, P. Schelling, L. An, L. Zhai, A. Kumar, "Failure Mechanisms, Life Prediction and Enhanced Performance of Thermal and Environmental Barrier Coatings," Florida Turbine Technology Initiative by NASA-Aeronautics Research Mission Directorate, Washington D.C., 2006-2008, \$211,000.
29. **Y.H. Sohn**, "Microstructural Characterization of Crack Initiation in Turbine Engine Components," Mitsubishi Power Systems, Inc., Orlando, FL and Florida High Tech Corridor, 2006-2006, \$22,500.
30. **Y.H. Sohn**, L. Zhai, F. Wei, "Development of Surface Modification Techniques for Synthesis of Hybrid Tungsten Nano-powders," US Department of Defense (DOD) - Army Research Laboratory, MD, 2006-2008, \$200,000.
31. **Y.H. Sohn**, "Microstructural Analysis of Fuel-Dependent Degradation in Thermal Barrier Coatings," Siemens Power Generation Incorporated, Orlando, FL and Florida High Tech Corridor, 2006-2007, \$79,500.
32. **Y.H. Sohn**, V.H. Desai, "Degradation of Thermal Barrier Coatings with Syngas Combustion: Testing by Hyperbaric Advanced Development Environmental Simulator and Characterization by Advanced Electron Microscopy," University Turbine Systems Research (UTSR), Department of Energy (DOE), 2005-2008, \$261,526.
33. **Y.H. Sohn**, "CAREER: Fundamentals of Multicomponent Diffusion in Multiphase Alloys – Advances in Phenomenological Descriptions and Experimental Techniques," Division of Materials Research, National Science Foundation (NSF), Arlington, VA, 2003-2008, \$424,610.
34. **Y.H. Sohn**, "Failure Mechanisms in Furnace-Cycle and Syngas Tested Thermal Barrier Coatings by Using Photoluminescence and Electron Microscopy," Siemens-Westinghouse Power Corporation, Orlando, FL and Florida High Tech Corridor, 2005-2006, \$67,778.
35. **Y.H. Sohn**, "Processing and Performance Evaluation of Thermal Barrier Coatings," Siemens-Westinghouse Power Corporation, Orlando, FL and Florida High Tech Corridor, 2005-2006, \$189,750.
36. **Y.H. Sohn**, "Assessment and Failure Analysis of Spring Clips, Deflector and Sleeve of Turbine Components," Mitsubishi Power Systems, Inc., Orlando, FL, 2005-2006, \$4,662.



37. S. Seal, **Y.H. Sohn**, V.H. Desai, "Acquisition of F4 and 7MB Thermal Spray Gun and DPV, AccuraSpray Software for Coatings Research", Siemens-Westinghouse Power Corporation, Orlando, FL, 2005, \$133,000; Presidential Initiative to Fund Major Research Equipment, University of Central Florida, 2005-2006, \$88,000; Total Funding of \$221,000.
38. **Y.H. Sohn**, "Fatigue Failure Analysis of Spindle Bolt," Siemens-Westinghouse Power Corporation, Orlando, FL, 2005-2006, \$3,797.
39. **Y.H. Sohn**, "Development of Thermal Wave Imaging as a Non-Destructive Evaluation Technique for Thermal Barrier Coatings," Solar Turbines Incorporated, San Diego, CA 92186-5376, 2004-2005, \$40,000.
40. **Y.H. Sohn**, "Reaction Characterization of High Temperature Materials by Differential Scanning Calorimetry," Lockheed Martin Missiles and Fire Control, Orlando, FL, 32819-8907, 2004-2005, \$12,000.
41. **Y.H. Sohn**, "Assessment of Diffusional Interactions in Ni-Cr-Al System with Ta and W Additions for Development of Durable Coatings," Siemens-Westinghouse Power Corporation, Orlando, FL and Florida High Tech Corridor, 2004-2005, \$66,667.
42. **Y.H. Sohn**, "ZFP Based Design of Oxidation and Hot-Corrosion Resistant Stand-Alone Metallic Coatings and Bond Coats for Thermal Barrier Coatings," Embryonic Technology Program, Siemens-Westinghouse Power Corporation, Orlando, FL and Florida High Tech Corridor, 2003-2004, \$88,882.
43. **Y.H. Sohn**, R.R. Vanfleet, L.A. Giannuzzi, "Scanning – High Resolution Transmission Electron Microscopy of Thermal Barrier Coatings as a Function of Bondcoat Compositions," Siemens-Westinghouse Power Corporation, Orlando, FL and Florida High Tech Corridor, 2002-2003, \$72,000.
44. **Y.H. Sohn**, V.H. Desai and L.A. Giannuzzi, "Assessment of Failure Mechanisms for Thermal Barrier Coatings by Photoluminescence, Electrochemical Impedance and Focused Ion Beam," University Turbine Systems Research (UTSR) Administered by Clemson University, Department of Energy (DOE) – National Energy Technology Laboratory (NETL), 2002-2005, \$208,228.
45. **Y.H. Sohn** and R.R. Vanfleet, "Microstructural Characterization of Next-Generation Thermal Barrier Coatings," Siemens-Westinghouse Power Corporation, Orlando, FL and Florida High Tech Corridor, 2001-2002, \$24,545.
46. **Y.H. Sohn** and L.A. Giannuzzi, "Microstructural Analysis of Hypoeutectic Al-Si Alloys Using Focused Ion Beam and Transmission Electron Microscopy", Worcester Polytechnic Institute, Worcester, MA, 2001, \$9,000.
47. **Y.H. Sohn**, "Isothermal Oxidation and Phase Transformation of Aluminized CMSX-4 Single Crystal Superalloys," Solar Turbines Incorporated, San Diego, CA 92186-5376, 2001-2002, \$25,000.
48. **Y.H. Sohn**, "Evaluation of Interdiffusion Coefficients from Combinatorial-Rapid Alloy Assessment Method," Corporate Research and Development (GE-CRD), General Electric Company, Schenectady, NY 12301, 2001, \$10,000.
49. **Y. H. Sohn** and S. Jha, "Development of Alumina Coatings for Extending the Life of Thermal Barrier Coatings," Surmet Corporation, Burlington, MA, 2001-2002, \$38,500.
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49. E. Jordan, M. Gell, D.R. Clarke, **Y.H. Sohn**, "Development of Laser Fluorescence as a Non-Destructive Inspection Technique for Thermal Barrier Coatings", Proceedings of the Materials Workshop II, 2001 Advanced Gas Turbine Systems Research (AGTSR) and Department of Energy (DOE) pp. 407-434 (March, 2002).
50. E.H. Jordan, **Y.H. Sohn**, W. Xie, M. Gell, L. Xie, F. Tu, K.R. Pattipati, P. Willett, "Residual Stress Measurement of Thermal Barrier Coatings Using Laser Fluorescence Technique and Their Life Prediction", Proceedings of the AUTOTESTCON, August 20-23, 2001, Valley Forge, Pennsylvania, USA, pp. 593-603.
51. **Y.H. Sohn**, K. Vaidyanathan, M. Ronski, E. Jordan and M. Gell, "Evolution of Photostimulated Luminescence from Thermally Grown Oxide in EBPVD/MCrAlY/IN738 Thermal Barrier Coatings during Thermal Cyclic Oxidation at 1121°C", *Proceedings of the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF*, April 30 – May 4, 2001, San Diego, California, USA, pp. 102-109.
52. **Y.H. Sohn**, J.H. Kim, E. Jordan and M. Gell, "Microstructural Development and Failure Characteristics of EBPVD/MCrAlY/IN738 Thermal Barrier Coatings during Thermal Cyclic Oxidation at 1121°C", *Proceedings of the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF*, April 30 – May 4, 2001, San Diego, California, USA, Accepted for Publication, pp. 70-78.
53. **Y.H. Sohn**, R. R. Biederman, and R. D. Sisson Jr., E. Y. Lee, B. A. Nagaraj, "Microstructural Characterization of Thermal Barrier Coatings on High Pressure Turbine Blades", *Proceedings of the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF*, April 30 – May 4, 2001, San Diego, California, USA, Accepted for Publication, pp. 132-139.
54. M. Gell, E.H. Jordan, **Y.H. Sohn**, D. Goberman, L. Shaw, T. L. Bergman, B. Cetegen, S. Jiang, M. Wang, T. D. Xiao, Y. Wang, P. Strutt, "Development and Implementation of Nanostructured Ceramic Coatings", *Proceedings of the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF*, April 30 – May 4, 2001, San Diego, California, USA, 48-54.

55. **Y.H. Sohn** and M.A. Dayananda, "A New Analysis for the Determination of Ternary Interdiffusion Coefficients for Ni-Cr-Al and Fe-Ni-Al Alloys", *Elevated Temperature Coatings: Science and Technology IV*, ed. N.B. Dahotre, J.M. Hampikian and J.E. Morral, TMS, Warrendale, Ohio, (February, 2001), 160-170.
56. M. Gell, E. Jordan, K. Vaidyanathan, K. McCarron, B. Barber, **Y.H. Sohn** and D. R. Clarke, "Bond Strength, Bond Stress and Spallation Mechanisms of Thermal Barrier Coatings", *Proceedings of the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF*, April, 12-16, 1999, San Diego, California, USA, p. 53-60.
57. R.D. Sisson, Jr., E.Y. Lee and **Y.H. Sohn**, "Failure Mechanisms and Life Prediction Methodology for Thermal Barrier Coatings", *Proceedings of the 2nd Pacific Rim International Conference on Advanced Materials and Processing*, (1995) p.1203-1210.
58. **Y.H. Sohn**, K.C. Cho, E.Y. Lee, R.R. Biederman and R.D. Sisson, Jr., "Phase Analysis of Physical Vapor Deposited ZrO<sub>2</sub>-8wt.%Y<sub>2</sub>O<sub>3</sub> Thermal Barrier Coatings", Published in the *Proceedings of the 1994 Materials for Advanced Power Engineering*, ed. D. Coutouradis et al. (1994) II:1345-1356.
59. **Y. H. Sohn**, S. Kotsonis, J. Bucciaglia, M. Hoekstra, R.D. Sisson, Jr. and M.N. Noori, "The Effects of Vibration Parameters on the Properties of Vibratory Casted Refractories", *Proceedings of the 23rd Midwestern Mechanics Conference*, (1993) p. 66-68.
60. **Y.H. Sohn**, "Partially Stabilized Zirconia Thermal Barrier Coatings", *Technical Ceramics International* (Sept., 1993) p. 5-6.
61. **Y.H. Sohn**, E.Y. Lee, R.R. Biederman and R.D. Sisson, Jr., "Life Prediction for Thermal Barrier Coatings During Thermal Fatigue", Presented and Published in the *Proceedings of the 11th International Invitational Symposium on the Unification of Analytical, Computational, and Experimental Solution Methodologies in Micromechanics and Microsystems*, (1993) p. 299-308.
62. **Y.H. Sohn**, E.Y. Lee and R.D. Sisson, Jr., "Life Prediction and Life Extension of Thermal Barrier Coatings for Gas Turbine Engines", *Proceedings of the 1992 Coatings for Advanced Heat Engine Workshop*, Sponsored by Office of Transportation Technology, Assistant Secretary for Conservation and Renewable Energy, U.S. Department of Energy, (1992) p. II:49-60.

**PLENARY AND INVITED PRESENTATIONS (To be Presented in Red)**

1. A. Giri, B. Paterson, M. McLeod, L. Zhou, C. Dennis, B. Majumdar, **Y.H. Sohn**, K. Cho, R. Shull, "Enhanced Magnetocaloric Effect in Ni.MnGa Based Magnetocaloric Alloys," 2013 Energy, Materials and Nanotechnology (EMN) Meeting – General Workshop, December 7-10, Orlando, Florida, USA.
2. **Y.H. Sohn**, "Thermal Barrier Coatings: Failure Characteristics Observed via Transmission Electron Microscopy," 8<sup>th</sup> International Conference on Processing and Manufacturing of Advanced Materials (THERMEC 2013), December 2-6, 2013, Las Vegas, Nevada, USA.
3. **Y.H. Sohn**, Le Zhou, H. Choi, "Selected Observations within and near Thermally Grown Oxide via Transmission Electron Microscopy," Invited Presentation at Materials Science and Technology 2013 Conference: Symposium on Surface Protection for Enhanced Materials Performance: Science, Technology, and Applications, October 27-31, 2013, Montreal, Quebec, Canada.
4. **Y.H. Sohn**, "Diffusion Kinetics in Magnesium Alloys for Materials Genome," Invited Presentation at the 2013 US-Korea Conference on Science, Technology and Entrepreneurship: Materials Science and Engineering Technical Symposium including Materials Genome, August 7-10, 2013, East Rutherford, New Jersey, USA.
5. **Y.H. Sohn**, "Understanding U-Zr and U-Mo based Metallic Fuels with ATR-NSUF Capabilities," Advanced Test Reactor – National Scientific User Facility User's Week Workshop, June 10-14, 2013, Idaho Falls, Idaho, USA.
6. **Y.H. Sohn**, "The Next Chapter of Diffusion Couple: Experiments for Materials Genome Development," Invited Presentation at the Materials Science and Engineering Colloquium, University of California - Riverside, May 22, 2013, Riverside, California, USA.
7. **Y.H. Sohn**, "Diffusion Investigations in Selected Binary Systems of Magnesium," Invited Presentation at the 2013 National Institute of Standards and Technology (NIST) Diffusion Workshop Series, May 9-10, 2013, Gaithersburgh, Maryland, USA.
8. N.S. Kulkarni, R.J. Warmack, **Y.H. Sohn**, K. Coffey, J. Hunter, G. Murch and I. Belova, "Tracer Diffusivity Data Collection and Reporting: Examples from the Mg-based systems," Invited Presentation at the 2013 National Institute of Standards and Technology (NIST) Diffusion Workshop Series, May 9-10, 2013, Gaithersburgh, Maryland, USA.
9. **Y.H. Sohn**, B. Yao, C. Hofmeister, C. Kammerer, B. Masumdar, A. Giri, K. Cho, "Nano-scale Grain Size Effects Observed on Aluminum Metal Matrix Composites: Strengthening, Stability and Growth," Invited Presentation at 2013 TMS Annual Meeting & Exhibition: 2013 Symposium on Functional Nanomaterials – Synthesis, Properties and Applications, March 3-7, 2011, San Antonio, Texas, USA.
10. **Y.H. Sohn**, L. Zhou, "Failure Mechanisms for EB-PVD TBCs with Pt-Modified NiAl Bondcoats and CMSX-4," Invited Presentation at 2013 TMS Annual Meeting & Exhibition: Symposium on Advances in Surface Engineering – Alloys and Coatings II, March 3-7, 2011, San Antonio, Texas, USA.
11. **Y.H. Sohn**, K. Huang, E. Perez, A. Ewh, D.D. Keiser, Jr., "Experimental Observations and Analyses from Diffusion Studies for U-Mo Nuclear Fuel Alloys," Invited Presentation at 2013 TMS Annual Meeting & Exhibition: Symposium on Phase Transformation and Microstructural Evolution, March 3-7, 2011, San Antonio, Texas, USA.
12. **Y.H. Sohn**, P. Mohan, "Development of Environmental / Thermal Barrier Coatings for Hot-Section Gas Turbine Components," Invited Presentation at the 2012 US-Korea Conference on Science, Technology and Entrepreneurship: Symposium on Mechanical, Aerospace and Ocean Systems Engineering, August 8-12, 2012, Los Angeles, California, USA.
13. **Y.H. Sohn**, K. Huang, E. Perez, D.D. Keiser, Jr., "Understanding Diffusional Behavior in U-Mo-X (X=Mo, Zr, Nb and Mg) Systems for the Development of Diffusion Barrier in RERTR Fuel Systems," Invited Presentation at the 8th International Conference on Diffusion in Solids and Liquids: Symposium on Diffusion Processes and Reactions in Engineering Alloys, DSL-2012, June 24 - 28, 2012, Istanbul, Turkey.



14. G. Murch, N. Kulkarni, B. Warmack, J. Hunter, I. Belova, **Y.H. Sohn**, "Diffusion in Mg-Al-Zn alloys," Invited Presentation at the 8th International Conference on Diffusion in Solids and Liquids: Symposium on Diffusion Processes and Reactions in Engineering Alloys, DSL-2012, June 24 - 28, 2012, Istanbul, Turkey.
15. **Y.H. Sohn**, "Microstructurally Designed Hierarchical Aluminum Metal Matrix Composites," Invited Lecture for Department of Mechanical Engineering, Worcester Polytechnic Institute, April 26, 2012, Worcester, Massachusetts, USA.
16. **Y.H. Sohn**, "Understanding Materials Kinetics for Development of Hierarchical Composites, Safer Nuclear Fuels, Advanced Gas Turbines and Lightweight Alloy," Invited Lecture for Mechanical, Materials and Aerospace Engineering, Illinois Institute of Technology, March 26, 2012, Chicago, Illinois, USA.
17. **Y.H. Sohn**, "Strain-Induced Grain Growth of Cryomilled Nanocrystalline Aluminum in Trimodal Composites During Hot-Forging," Invited Presentation at the US-Korea Summit on Science and Engineering of 40 Years (UKC-2011), August 10-14, 2011, Park City, Utah, USA.
18. **Y.H. Sohn**, "High Temperature Materials and Coatings: Recent Research Trends," Invited Presentation at the Invited KOFST Symposium on Materials and Sensors at the US-Korea Summit on Science and Engineering of 40 Years (UKC-2011), August 10-14, 2011, Park City, Utah, USA.
19. N.S. Kulkarni, **Y.H. Sohn**, J.L. Hunter, S.T. Brennan, K.R. Coffey, P.J. Todd, B. Radhakrishnan, G.E. Murch, I.V. Murch, "Diffusion Databases for Mg - Integrated Computational Materials Engineering," Invited Presentation at the 7th International Conference on Diffusion in Solids and Liquids: Symposium on Chemical Diffusion and Reaction in Engineering Alloys, DSL-2011, June 26 - 30, 2011, Algarve, Portugal.
20. **Y.H. Sohn**, E. Perez, B. Yao, A. Ewh, D.D. Keiser, Jr., "Selected Observations from Interdiffusion Study in U-Mo-Al System," Invited Presentation at 2011 TMS Annual Meeting & Exhibition: Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science in honor of Prof. John Agren, February 27 - March 3, 2011, San Diego, California, USA.
21. I.V. Belova, A.R. Allnatt, **Y.H. Sohn**, N.S. Kulkarni, S.T. Brennan, G.E. Murch, "Development of a Theory of Solute Diffusion Enhancement for Analyzing Interdiffusion Experiments," To be Presented at 2011 TMS Annual Meeting & Exhibition: Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science in honor of Prof. John Agren, February 27 - March 3, 2011, San Diego, California, USA.
22. C. Uribe, B. Yao, M.D. Skibo, A. Drake, D. Schuster, A. Loukus, K. Cho, **Y.H. Sohn**, "Effect of Successive Hot Rolling on the microstructure and dynamic compressive strength of Al A359/SiCp Composites Prepared by Stir Casting," Invited Presentation at Symposium on High Strain Rate Behaviors of Composites and Heterogeneous Materials: Experiments, Modeling, and Simulation, Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
23. N. Kulkarni, P. Todd, **Y.H. Sohn**, K.R. Coffey, S. Brennan, J. Hunter, "Isotopic Diffusion Database for Mg ICME," Invited Presentation at the U.S. Automotive Materials Partnership Integrated Computational Materials Engineering (UAMP-IMCE) for Magnesium Program Workshop, April 30-31, 2010, U.S. Council for Automotive Research (USCAR) LLC, Southfield, MI, USA.
24. A. Ewh, E. Perez, D.D. Keiser, Jr., **Y.H. Sohn**, "Characterization of Interaction Layer in U-Mo-X (X = Nb, Ti, Zr) vs. Al Diffusion Couples Annealed at 600°C for 10 hours," Invited Presentation at the 6<sup>th</sup> International Conference on Diffusion in Solids and Liquids (DSL-2010), July 5-7, Paris, France.
25. **Y.H. Sohn**, B. Yao, T. Patterson, C. Hofmeister, H. Heinrich, "Microstructural Analysis for Manufacturing Optimization of Trimodal Al Matrix Composites," Invited Presentation at Aluminum for Defense Applications Workshop, May 3-4, 2010, Baltimore, MD, USA.
26. J. Jedlinski, H.J. Choi, B. Yao, **Y.H. Sohn**, "Evolution of Phase Constituents and Microstructure in Thermally Grown Oxides on  $\beta$ -NiAl without and with Implanted-Yttrium," Invited Presentation at the 34th Annual International Conference on Advanced Ceramics and Composites, January 24 - 29, 2010, Daytona Beach, Florida, USA.

27. B. Yao, C. Hofmeister, T. Patterson, **Y.H. Sohn**, K. Cho, "Effects of Processing on the Microstructure and Properties of the Commercial-Scale Trimodal Al Metal Matrix Composites," NATO Advanced Research Workshop on Boron Rich Solids, December 14-17, 2009, Orlando, Florida, USA.
28. **Y.H. Sohn**, P. Schelling, P. Mohan, D. Nguyen, "Degradation of Thermal Barrier Coatings by Fuel Impurities and CMAS," Invited Presentation at 2009 International Thermal Spray Conference and Exposition, May 4-7, 2009, Las Vegas, Nevada, U.S.A.
29. **Y.H. Sohn**, "Analysis of Multicomponent Interdiffusion and its Application in High Temperature Alloys and Coatings," Invited Presentation at 2009 International Conference on Metallurgical Coatings and Thin Films ICMCTF-2009, April 28 – May 2, 2009, San Diego, California, USA.
30. N. Kulkarni, P. Todd, **Y.H. Sohn**, "Isotopic Diffusion Database for Mg ICME," Invited Presentation at the U.S. Automotive Materials Partnership Integrated Computational Materials Engineering (UAMP-IMCE) for Magnesium Program Workshop, April 27, 2009, U.S. Council for Automotive Research (USCAR) LLC, Southfield, MI, USA.
31. **Y.H. Sohn**, "Modeling and Experimentation of ThermoTransport in Multicomponent-Multiphase Alloys," Invited Presentation at the 2008 National Institute of Standards and Technology Diffusion Workshop, March 25-26, 2009, Gaithersburgh, Maryland, USA.
32. M.A. Okuniewski, S.L. Hayes, D.D. Keiser, **Y.H. Sohn**, Y. Wang, J.E. Morral, "Challenges Associated with the Global Nuclear Energy Partnership Nuclear Fuels and Structural Materials," Invited Presentation at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
33. **Y.H. Sohn**, "High Temperature Alloys and Coatings Research for Advanced Gas Technologies," Advanced Gas Technologies Seminar, Alstom-Power Systems Mfg., LLC, December 19, 2008, Jupiter, Florida, U.S.A.
34. **Y.H. Sohn**, E. Perez D.D. Keiser, Jr., "Phase Constituents and Growth Kinetics of Aluminides in U-Mo vs. Al Diffusion Couples," Invited Presentation at the 7<sup>th</sup> International Conference on Diffusion in Materials, October 28-31, 2008, Lanzarote - Canary Island, Spain.
35. N.S. Kulkarni, P.J. Todd, **Y.H. Sohn**, "Methods, generation and interpretation of data and databases," Invited Presentation at Materials Science and Technology 2008 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK III, October 5-9, 2008, Pittsburgh, Pennsylvania, U.S.A.
36. P. Mohan, T. Patterson, V.H. Desai, **Y.H. Sohn**, "Degradation of Yttria Stabilized Zirconia Thermal Barrier Coatings by Molten CMAS (CaO-MgO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>) Deposits," Keynote Lecture at 7<sup>th</sup> International Symposium on High-Temperature Corrosion and Protection of Materials, May 18-23, 2008, Lez Embiez, France.
37. R.R. Mohanty, **Y.H. Sohn**, "Phase-Field Simulation of ThermoTransport," Invited Presentation at the 2008 National Institute of Standards and Technology Diffusion Workshop, May 12 – 13, 2008, Gaithersburgh, Maryland, USA.
38. E. Perez, D.D. Keiser, Jr., **Y.H. Sohn**, "U-Mo vs. Al Diffusion Couples: Fuel-Cladding Interactions," Invited Presentation at the 2008 National Institute of Standards and Technology Diffusion Workshop, May 12 – 13, 2008, Gaithersburgh, Maryland, USA.
39. **Y.H. Sohn**, "Thermal Barrier Coatings Research: Fuel-Dependent Failure Mechanisms and Foundation of Life Prediction Model," **ChangJiang Scholar Lecture** at International Seminar on Research and Development of Ceramic Composites," Northwestern Polytechnic University, April 15, 2008, Xian, China.
40. **Y.H. Sohn**, "Role of Multicomponent Interdiffusion in Durability and Reliability of Materials Systems for Power Generation," **ChangJiang Scholar Lecture** at International Seminar on Research and Development of Ceramic Composites," Northwestern Polytechnic University, April 15, 2008, Xian, China.
41. **Y.H. Sohn**, "Multicomponent Interdiffusion and Power Production Systems," Invited Presentation at 2008 Research Week, March 31 – April 4, 2008, University of Central Florida, Orlando, FL, USA.

42. **Y.H. Sohn**, "Application of Phase Field Model to Study the Microstructure Evolution in a Coating-Substrate Assembly for High Temperature Applications," Invited Presentation at ASM/NASF - Surface Engineering for Aerospace and Defense Applications, January 21-22, 2008, Orlando, FL, USA.
43. **Y.H. Sohn**, "Understanding of Multicomponent Interdiffusion and Its Applications," Invited Presentation at Materials Seminar Series, University of Connecticut, December 6, 2007, Storrs, Connecticut, USA.
44. **Y.H. Sohn**, "Determination of Average Multicomponent Interdiffusion Coefficients and its Applications" Invited Presentation at Materials Research Society (MRS) Fall Meeting: Symposium on Modeling and Numerical Simulation of Multi-Physics Materials Behavior, November 26-30, 2007, Boston, Massachusetts, USA.
45. V.H. Desai, **Y.H. Sohn**, "Non-Destructive Evaluation and Failure Mechanisms in Thermal Barrier Coatings," Invited Presentation at 3ER CONGRESO CIMAV Materiales-Ambiental, October 25-26, 2007, Centro de Investigación en Materiales Avanzados, S.C., Mexico.
46. **Y.H. Sohn**, "Role of Multicomponent Interdiffusion in Durability and Reliability of Materials Systems for Power Generation," *Plenary Presentation* at the 3rd International Conference on Diffusion in Solids and Liquids: Mass Transfer, Heat Transfer, Microstructure & Properties, DSL-2007, July 5-7, 2007, Algarve, Portugal.
47. **Y.H. Sohn**, "Composition-Dependent Growth Kinetics of Intermetallic Phases in U-Mo vs. Al Alloy Diffusion Couples Annealed at 550°C and 600°C," Invited Presentation at the High Throughput Analysis of Multicomponent Multiphase Diffusion Data: A Workshop Hosted by National Institute of Standards and Technology (NIST), May 14-15, 2007, Gaithersburg, Maryland, USA.
48. **Y.H. Sohn**, "Ternary Interdiffusion Coefficients in NiAl (L1<sub>2</sub>) with Ir, Ta or Re alloying additions," Invited Presentation at the High Throughput Analysis of Multicomponent Multiphase Diffusion Data: A Workshop Hosted by National Institute of Standards and Technology (NIST), May 14-15, 2007, Gaithersburg, Maryland, USA.
49. **Y.H. Sohn**, N. Garimella, R. Mohanty, J. Liu, E. Perez, "Determination of Interdiffusion Coefficients in Multicomponent Alloys using Moments of Interdiffusion Fluxes," Invited Presentation at Materials Science & Technology (MS&T) 2006: Symposium Phase Stability, Diffusion, and Their Applications, October 15-19, 2006, Cincinnati, Ohio, USA.
50. **Y.H. Sohn**, "Integrated, Effective and Average and Their Applications in Multicomponent Alloys for Energy Production Systems," Invited Presentation at the 2nd International Conference on Diffusion in Solids and Liquids: Mass Transfer, Heat Transfer, Microstructure & Properties, DSL-2006, July 26-28, 2006, Aveiro, Portugal.
51. **Y.H. Sohn**, J. Liu, K.S. Murphy, "Microstructural Evolution of Durable Thermal Barrier Coatings with Hf and/or Y Modified Superalloy Substrates," Invited Presentation at the THERMAEC - 2006 International Conference on Processing and Manufacturing of Advanced Materials, July 4 - 8, 2006, Vancouver, Canada.
52. **Y.H. Sohn**, "International Cooperation Support Program 2006: Multicomponent-Multiphase Interdiffusion," Invited Presentation at National Institute of Materials Science (NIMS), June 7, 2006, Tsukuba, Japan.
53. **Y.H. Sohn**, "International Cooperation Support Program 2006: Non-Destructive and Microstructural Characterization of Thermal Barrier Coatings," Invited Presentation at National Institute of Materials Science (NIMS), June 6, 2006, Tsukuba, Japan.
54. **Y.H. Sohn**, B. Jayaraj, B. Franke, S. Laxman, J.W. Byeon, "Evolution in Photoluminescence and Electrochemical Impedance with Microstructural Changes in Thermal Barrier Coatings," Invited Presentation at the 2006 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, May 1 - May 5, 2006, San Diego, California, USA.
55. **Y.H. Sohn**, "Failure Mechanisms in Thermal Barrier Coatings," Invited Presentation at Research Institute of Science and Technology (RIST) for RIST, Pohang Steel Company (POSCO), and Pohang University of Science and Technology (POSTECH), May 20, 2005, Pohang, Korea.

56. **Y.H. Sohn**, "Failure Mechanisms in Thermal Barrier Coatings," Invited Presentation at Hanyang University, May 19, 2005, Seoul, Korea.
57. **Y.H. Sohn**, "Failure Mechanisms in Thermal Barrier Coatings Assessed by Non-Destructive and Microstructural Characterization," Invited Presentation at the Korea Electrical Power Research Institute (KEPRI), May 17, 2005, Daeduk, Korea.
58. **Y.H. Sohn**, "Failure Mechanisms in Thermal Barrier Coatings Assessed by Non-Destructive and Microstructural Characterization," Invited Presentation at the Korea Research Institute of Standards and Science (KRISS), May 16, 2005, Daeduk, Korea.
59. **Y.H. Sohn**, "Failure Mechanisms in Thermal Barrier Coatings," Invited Presentation at Seoul National University of Technology, May 14, 2005, Seoul, Korea.
60. **Y.H. Sohn**, "Assessment of Failure Mechanisms in Thermal Barrier Coatings by Non-Destructive and Microstructural Characterization," Invited Presentation at the Materials Engineering Seminar, Purdue University, March 29, 2005, West Lafayette, IN, U.S.A.
61. **Y.H. Sohn**, "Failure Characteristics of Thermal Barrier Coatings Examined by Non-Destructive and Microstructural Analysis," Invited Presentation at Metals and Ceramics Division of Oak Ridge National Laboratory (ORNL), December 8, 2005, Oak Ridge, Tennessee.
62. V.H. Desai, **Y.H. Sohn**, "Non-Destructive and Microstructural Characterization of Thermal Barrier Coatings," Invited Presentation at 2004 TransMat Expo, ASM International, November 8-10, Mumbai, India.
63. **Y. H. Sohn**, "High Temperature Coatings: Non-Destructive Evaluation, Microstructural Characterization and Interdiffusion Analysis", Invited Presentation at the Mechanical Engineering Seminar, Worcester Polytechnic Institute, May 27, 2004, Worcester, Massachusetts, U.S.A.
64. **Y.H. Sohn**, "Determination of Composition Dependent Ternary Interdiffusion Coefficients," Invited Presentation at the High Throughput Analysis of Multicomponent Multiphase Diffusion Data: A Workshop Hosted by National Institute of Standards and Technology (NIST), April 1-2, 2004, Gaithersburg, Maryland, USA.
65. **Y.H. Sohn**, "Interdiffusion Structures and Coefficients in Ternary Systems," Invited Presentation at the 2004 TMS Annual Meeting and Exposition: Symposium on Challenges in Advanced Thin Films: Microstructures, Interfaces, and Reactions, March 14-18, Charlotte, North Carolina, USA.
66. **Y.H. Sohn**, V.H. Desai and L.A. Giannuzzi, "Assessment of Failure Mechanisms for Thermal Barrier Coatings by Photoluminescence, Electrochemical Impedance and Focused Ion Beam", Invited Presentation at the 2003 University Turbine Systems Research (UTSR) – Peer Review Workshop, October 28-30, 2003, Clemson, South Carolina, USA.
67. V.H. Desai, **Y.H. Sohn**, "Non-Destructive Testing of Thermal Barrier Coatings," Invited Presentation at the 2002 International Conference and Exhibition on Failure Analysis, The Institute of Materials Engineering Australia Ltd., November 20-22, 2002, Melbourne, Australia
68. **Y.H. Sohn**, B.W. Kempshall, V.H. Desai and L.A. Giannuzzi, "Assessment of Failure Mechanisms for Thermal Barrier Coatings by Photoluminescence, Electrochemical Impedance and Focused Ion Beam", Invited Presentation at the 2002 Advanced Gas Turbine Systems Research (AGTSR) – High Efficiency Engines and Turbines (HEET), Department of Energy (DOE) Materials Workshop III, October 14-16, 2002, Storrs, Connecticut, USA.
69. **Y.H. Sohn**, V.H. Desai and L.A. Giannuzzi, "Assessment of Failure Mechanisms for Thermal Barrier Coatings by Photoluminescence, Electrochemical Impedance and Focused Ion Beam", Presented at Turbine Power Systems Conference and Condition Monitoring Workshop of National Energy Technology Laboratory (NETL), February 25-27, 2002, Galveston, Texas, USA.

70. **Y.H. Sohn**, "Non-Destructive Evaluation and Microstructural Characterization of Thermal Barrier Coatings", Invited Presentation at the Korea Electric Power Research Institute (KEPRI), December 28, 2001, Daejeon, Korea.
71. M. Gell, E. Jordan, F. Pettit, G. Meier, **Y.H. Sohn**, "Thermal Barrier Coatings and Metallic Coatings with Improved Durability", Invited Presentation at the 2001 Advanced Gas Turbine Systems Research (AGTSR) Department of Energy (DOE) Materials Workshop II, October 8-10, 2001, Greenville, South Carolina, USA.
72. E. Jordan, M. Gell, D.R. Clarke, **Y.H. Sohn**, "Development of Laser Fluorescence as a Non-Destructive Inspection Technique for Thermal Barrier Coatings", Invited Presented at the 2001 Advanced Gas Turbine Systems Research (AGTSR) Department of Energy (DOE) Materials Workshop II, October 8-10, 2001, Greenville, South Carolina, USA.
73. M. Gell, L. Shaw, D. Goberman, E. Jordan, B. Cetegen, T. Bergmann, D. Xiao, **Y.H. Sohn**, "The Science and Technology of Nanostructured Ceramic Coatings", Invited Presentation at the United Engineering Foundation Conference on Novel Synthesis and Processing of Nanostructured Coatings for Protection Against Degradation, August 12-17, 2001, Congress Center and Cresta Sun Hotel, Davos, Switzerland.
74. **Y.H. Sohn**, "Evolution of Photo-Stimulated Luminescence and Microstructure of Thermal Barrier Coatings During Thermal Cyclic Oxidation at 1121°C", Invited Presentation at Siemens-Westinghouse Power Corporation, July 9, 2001, Orlando, FL, USA.
75. M. Gell, E. Jordan, **Y.H. Sohn**, L. Shaw, T.D. Xiao, "Development and Implementation of Nanostructured Ceramic Coatings", Invited Plenary Presentation at the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 30 – May 4, 2001, San Diego, California, USA.
76. M. Gell, L. Shaw, E. Jordan, N. Padture, **Y.H. Sohn**, "Advanced Coating Technology Development for Enhanced Durability and Reduced Cost in Naval Applications", Invited Presentation at Nanostructured Materials Workshop, National Research Council, 1<sup>st</sup> Quarter, 2001, Washington D.C., U.S.A.
77. M. Gell, E. H. Jordan, **Y.H. Sohn**, D. Goberman, L. Shaw, T. L. Bergman, B. Cetegen, S. Jiang, M. Wang, T. D. Xiao, Y. Wang and P. Strutt, "Development and Implementation of Plasma Sprayed Nanostructured Ceramic Coatings", Invited Presentation at Thermec'2000 International Conference on Processing and Manufacturing of Advanced Materials: Symposium on Thermal Spraying of Nanostructured Coatings, December 4-8, 2000, Las Vegas, Nevada, U.S.A.
78. M. Gell, E. Jordan and **Y.H. Sohn**, "Improving the Durability of Thermal Barrier Coatings", Invited Plenary Presentation at 2000 Materials Research Society Fall Meeting: Symposium on Thermal Barrier Coatings, November 27-December 1, 2000, Boston, Massachusetts, U.S.A.
79. L. Shaw, D. Goberman, **Y.H. Sohn**, E. H. Jordan and M. Gell, "Mechanical Properties of Nanostructured Alumina-Titania Coatings", Invited Presentation at the Symposium of Structure and Mechanical Properties of Nanophase Materials, MRS Fall 2000 Meeting, November 27 – December 1, 2000, Boston, Massachusetts, U.S.A.
80. M. Gell, E. H. Jordan, K. Vaidyanathan, K. McCarron, **Y.H. Sohn**, "Bond Coat Microstructure and Spallation Damage Initiation in Thermal Barrier Coatings", Invited Presentation at the 52<sup>nd</sup> Pacific Coast Regional and Basic Science Division Meeting of The American Ceramic Society, September 6-9, 2000, San Francisco, California, U.S.A.
81. E. P. Jordan, M. Gell and **Y.H. Sohn**, "Development of Laser Fluorescence as a Non-Destructive Inspection Technique for Thermal Barrier Coatings", Invited Presentation at the 1999 Advanced Turbine Systems Annual Conference, November 8 – 12, 1999, Pittsburg, Pennsylvania, U.S.A.
82. **Y. H. Sohn**, "Interdiffusion Fluxes and Transport Coefficients Under Multiple Gradients in Selected Ternary Systems", Invited Presentation at the Seminar for Department of Metallurgy and Materials Engineering, University of Connecticut, October 25, 1999, Storrs, Connecticut, U.S.A.
83. E. P. Jordan, M. Gell, **Y. H. Sohn**, K. Murphy and D. R. Clarke, "Development of Laser Fluorescence as a Non-Destructive Inspection Technique for Thermal Barrier Coatings", Invited Presentation at the 1999 Electrical Power Research Institute Workshop, October 18 – 19, 1999, Palo Alto, California, U.S.A.

84. **Y. H. Sohn**, "Interdiffusion Fluxes and Transport Coefficients Under Multiple Gradients in Selected Ternary Systems", Invited Presentation at the Materials Engineering Seminar, Worcester Polytechnic Institute, October 14, 1999, Worcester, Massachusetts, U.S.A.
85. M. A. Dayananda and **Y. H. Sohn**, "Interdiffusion between MCrAlY Coatings and Selected Ni-Base Alloys", Invited Presentation at the ASM Materials Congress during 1995 Materials Week - Symposium on High Temperature Coatings and Their Applications, October 30-November 2, 1995, Cleveland, Ohio, U.S.A.
86. R. D. Sisson, Jr., E. Y. Lee and **Y. H. Sohn**, "Failure Mechanisms and Life Prediction Methodology for Thermal Barrier Coatings", Invited Presentation at the 2nd Pacific Rim International Conference on Advanced Materials and Processing, June 18-22, 1995, Kyungju, Korea.
87. R. D. Sisson, Jr., **Y. H. Sohn**, E. Y. Lee, R. R. Biederman and B. A. Nagaraj, "Microstructural Characterization of Thermal Barrier Coatings on High Pressure Turbine Blade", Invited Presentation at the 8th CIMTEC - World Ceramic Congress & Forum on New Materials, June 28-July 4, 1994, Florence, Italy.

**CONTRIBUTING PRESENTATIONS (To be Presented in Red)**

1. C. Hofmeister, A. Giri, S. Brennan, T. Delahanty, **Y.H. Sohn**, K. Cho, "Effect of Process Control Agent on the Microstructure and Mechanical Behavior of an Aluminum and B.C Metal Matrix Composite," To be Presented at the Symposium on Light-metal Matrix (Nano)-composites, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
2. L. Zhou, A. Giri, K. Cho, **Y.H. Sohn**, "Martensitic Transformations Study from Composition Gradients Generated by Diffusion Couples for in NiMnGa System," To be Presented at the Symposium on Magnetic Materials for Energy Applications IV, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
3. C. Kammerer, N. Kulkarni, R. Warmack, **Y.H. Sohn**, "Al and Zn Impurity Diffusion in Binary and Ternary Magnesium Solid-Solutions," To be Presented at the Symposium on Magnesium Technology 2014, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
4. Y. Park, J. Kang, D.D. Keiser, Jr., **Y.H. Sohn**, "Development of Phase Constituents and Microstructure in Monolithic U-Mo Fuel Plate Assembly During Hot Isostatic Pressing," To be Presented at the Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors III, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
5. N. Kulkarni, R. Warmack, J. Hunter, **Y.H. Sohn**, K.R. Coffey, G.E. Murch, I. Belova, "SIMS-Based Experimental Studies of Tracer Diffusion," To be Presented at the Hume-Rothery Award Symposium on Thermodynamics and Kinetics of Engineering Materials, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
6. M. McLeod, A. Giri, L. Zhou, S. Vogel, **Y.H. Sohn**, K. Cho, B. Majumdar, "Enhanced Magnetocaloric Effect (MCE) in Polycrystalline Ni,MnGa Alloys Through Isobaric Thermal Cycling and Correlation with Texture Changes," To be Presented at the Symposium on Magnetic Materials for Energy Applications IV, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
7. K. Kaiser, A. Giri, **Y.H. Sohn**, M. van den Burgh, K. Cho, B. Majumdar, "Thermomechanical Processing of a Cryomilled Al-Mg Alloy," To be Presented at the Symposium on Ultrafine Grained Materials VIII, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
8. M. Fu, C. Kammerer, L. Zhou, D.D. Keiser, Jr., **Y.H. Sohn**, "Interdiffusion between Mg and AA6061 Aluminum Alloy," To be Presented at the Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors III, 2014 TMS Annual Meeting & Exhibition, February 16-20, 2014, San Diego, California, USA.
9. O. Ahmed, L. Zhou, N. Mohajeri, **Y.H. Sohn**, "Corrosion Behavior of 304 Stainless Steel in Contact with Molten Alkali Nitrite-Nitrate Solar Salt," 8<sup>th</sup> International Conference on Processing and Manufacturing of Advanced Materials (THERMEC 2013), December 2-6, 2013, Las Vegas, Nevada, USA.
10. C. Hofmeister, J. Hamilton, O. Ahmed, W. Mohr, K. Cho, **Y.H. Sohn**, "Friction Stir Lap Joint between AA2138-T8 and B.C Reinforced AA5083 Metal Matrix Composites," 8<sup>th</sup> International Conference on Processing and Manufacturing of Advanced Materials (THERMEC 2013), December 2-6, 2013, Las Vegas, Nevada, USA.
11. A. Giri, M. McLeod, C. Dennis, R. Shull, S. Vogel, **Y.H. Sohn**, B. Majumdar, "Enhancement of Magnetocaloric Effect (MCE) in off-Stoichiometric Polycrystalline Ni,MnGa Alloys Through Isobaric Thermal Cycling and Correlation with Texture Changes," 58th Annual Magnetism and Magnetic Materials (MMM) Conference, November 4-8, 2013, Denver, Colorado, USA.
12. G.E. Murch, I. Belova, N. Kulkarni, **Y.H. Sohn**, "Isotopic Interdiffusion Analysis and Its Application," Presented at Materials Science and Technology 2013 Conference: Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-VIII), October 27-31, 2013, Montreal, Quebec, Canada.
13. **Y.H. Sohn**, "A Day in the Life of a University Faculty – Perspective from 1.75 Generation Korea-American," Presented at the 2013 US-Korea Conference on Science, Technology and Entrepreneurship: Young Generation and Professional Forum, August 7-10, 2013, East Rutherford, New Jersey, USA.

14. **Y.H. Sohn**, "Selected Observations within and near the Thermally Grown Oxide via Transmission Electron Microscopy," Presented at the 2013 US-Korea Conference on Science, Technology and Entrepreneurship: Solar Turbines Forum on Gas Turbine Technology, August 7-10, 2013, East Rutherford, New Jersey, USA.
15. M.V. Mcleod, B.A. Paterson, A.K. Giri, L. Zhou, C.L. Dennis, K.C. Cho, R.D. Shull, **Y.H. Sohn**, and B.S. Majumdar, "Effects of Isobaric Thermal Cycling on Magnetocaloric Effect in Near Ni<sub>2</sub>MnGa Alloys," Presented at the Fourth International Conference on Ferromagnetic Shape Memory Alloys (ICFSMA-2013), June 3-6, 2013, Boise, Idaho, USA.
16. C. Kammerer, N. Kulkarni, R. Warmack, K. Perry, I. Belova, G.E. Murch, **Y.H. Sohn**, "Impurity Diffusion Coefficients of Al and Zn in Mg Determined from Solid-to-Solid Diffusion Couples," Presented at 2013 TMS Annual Meeting & Exhibition: Symposium on 2013 Magnesium Technology, March 3-7, 2013, San Antonio, Texas, USA.
17. E. Ambroziak, N. Kulkarni, B. Warmack, B. Radhakrishnan, B. Evans III, K.R. Coffey, **Y.H. Sohn**, J. Hunter, J. Tuggle, G.E. Murch, I. Belova, "Experimental Grain Boundary Diffusivities in Magnesium Thin Films using Secondary Ion Mass Spectroscopy," Presented at 2013 TMS Annual Meeting & Exhibition: Symposium on Computational Thermodynamics and Kinetics, March 3-7, 2013, San Antonio, Texas, USA.
18. W. Sprowes, M. Okuniewski, **Y.H. Sohn**, "Experimental Observation on Redistribution of Composition and Microstructure in U-10wt.%Zr Alloy After Anneals Under Temperature Gradient," Presented at 2013 TMS Annual Meeting & Exhibition: Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors II, March 3-7, 2013, San Antonio, Texas, USA.
19. Y. Park, K. Huang, B.H. Sencer, J.R. Kennedy, K.R. Coffey, **Y.H. Sohn**, "Interdiffusion and Reaction Between U-Zr and Fe-Cr-Ni Alloys," Presented at 2013 TMS Annual Meeting & Exhibition: Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors II, March 3-7, 2013, San Antonio, Texas, USA.
20. **Y.H. Sohn**, D. Shin, C. Kammerer, S. Brennan, K. Bermudez, J. Hamilton, "Diffusion Database for the Development of Magnesium Alloys and Their Hierarchical Composites," Presented at 2013 TMS Annual Meeting & Exhibition: Symposium on Hybrid and Hierarchical Composite Materials, March 3-7, 2011, San Antonio, Texas, USA.
21. Y.J. Park, K. Huang, B.H. Sencer, J.R. Kennedy, K.R. Coffey, **Y.H. Sohn**, "Interdiffusion and Reaction between U-Zr and Fe-Cr-Ni Alloys," Presented at the 2012 Materials Research Society (MRS) Fall Meeting, Symposium (HH) on Advanced Materials for Nuclear Energy, November 25-30, 2012, Boston, MA, USA.
22. A. Aitkaliyeva, C.C. Wei, A. Ewh, **Y.H. Sohn**, B.H. Sencer, J.R. Kennedy, L. Shao, "Phase Equilibrium in Ion Beam Irradiated Fe-Mo Diffusion Couples," Presented at the 2012 Materials Research Society (MRS) Fall Meeting, Symposium (HH) on Advanced Materials for Nuclear Energy, November 25-30, 2012, Boston, MA, USA.
23. K. Huang, Q. Sun, **Y.H. Sohn**, "Determination of Ternary Interdiffusion Coefficients from a Single Diffusion Couple using Regression via Matrix Transformation," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VII), Materials Science & Technology 2012 (MS&T 2012), October 7-11, 2012, Pittsburgh, PA, USA.
24. C. Kammerer, N. Kulkarni, R. Warmack, I. Belova, G.E. Murch, **Y.H. Sohn**, "Diffusion in Magnesium with Dilute Alloying Addition of Aluminum and Zinc," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VII), Materials Science & Technology 2012 (MS&T 2012), October 7-11, 2012, Pittsburgh, PA, USA.
25. Y.J. Park, K. Huang, B.H. Sencer, J.R. Kennedy, **Y.H. Sohn**, "Interdiffusion between U - 10wt.%Zr and Fe - 15wt.%Cr - 15wt.%Ni Diffusion Couples Annealed at 600, 650 and 700°C," Presented at the Symposium on Materials Development for Nuclear Applications and Extreme Environment, Materials Science & Technology 2012 (MS&T 2012), October 7-11, 2012, Pittsburgh, PA, USA.
26. N.S. Kulkarni, R. Warmack, B. Radhakrishnan, J. Tuggle, J. Hunter, C. Kammerer, **Y.H. Sohn**, E. Dein, K.R. Coffey, G.E. Murch, I. Belova, "Diffusion Studies in Mg-Al-Zn," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VII), Materials Science & Technology 2012 (MS&T 2012), October 7-11, 2012, Pittsburgh, PA, USA.



27. K. Huang, D.D. Keiser, Jr., **Y.H. Sohn**, "Interdiffusion between U-Mo Alloy and Mo Diffusion Barrier Layer," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VII), Materials Science & Technology 2012 (MS&T 2012), October 7-11, 2012, Pittsburgh, PA, USA.
28. J. Dickson, A. Ewh, D.D. Keiser, Jr., **Y.H. Sohn**, "Interdiffusion Behavior of the Al-Zr System and the Effects of Si," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VII), Materials Science & Technology 2012 (MS&T 2012), October 7-11, 2012, Pittsburgh, PA, USA.
29. **Y.H. Sohn**, K. Huang, E. Perez, D.D. Keiser, Jr., "Development of Diffusion Barrier for U-Mo Metallic Fuels," Presented at the 2012 US-Korea Conference on Science, Technology and Entrepreneurship: Symposium on Advanced Materials and Nanotechnology, August 8-12, 2012, Los Angeles, California, USA.
30. N.S. Kulkarni, J. Hunter, B. Warmack, B. Radhakrishnan, **Y.H. Sohn**, K.R. Coffey, G.E. Murch, I. Belova, "Tracer and Interdiffusion Studies in Mg-Al-Zn Alloys," To be Presented at the 9<sup>th</sup> International Conference on Magnesium Alloys and Their Applications (Mg-2012), July 8-12, 2012, Vancouver, BC, Canada.
31. S. Brennan, K. Bermudez, **Y.H. Sohn**, "Intermetallic Growth and Interdiffusion in the Mg-Nd System," 9<sup>th</sup> International Conference on Magnesium Alloys and Their Applications (Mg-2012), July 8-12, 2012, Vancouver, BC, Canada.
32. C. Hofmeister, T. Topping, M. van den Bergh, **Y.H. Sohn**, K. Cho, "Microstructural Characteristics of High Rate Plastic Deformation in Al Trimodal Metal Matrix Composites," Presented at the 13<sup>th</sup> International Conference on Aluminum Alloys (ICAA-13), June 3-7, 2012, Pittsburgh, PA, USA.
33. V. Champagne, M. Trexler, **Y.H. Sohn**, G. Kim, "Novel Cold Spray Nanostructured Aluminum," Presented at the 13<sup>th</sup> International Conference on Aluminum Alloys (ICAA-13), June 3-7, 2012, Pittsburgh, PA, USA.
34. B. Yao, C. Krammerer, B. Simkin, B. Majumdar, C. Smith, M. van den Bergh, K. Cho, **Y.H. Sohn**, "Strain-induced grain growth of cryomilled nanocrystalline Al in Trimodal composites during forging" Presented at the 2012 Conference of Society for the Advancement of Materials and Process Engineering (SAMPE 2012), May 21-24, 2012, Baltimore, MD, USA.
35. T. Field, A. Jones, M. Jansz, S. Raghavan, **Y.H. Sohn**, J. Okasinski, J. Almer, "Synchrotron X-rays Monitoring Nano-Aluminum Grain Growth of a Metal Matrix Composite under Thermo-mechanical Conditions," Presented at the 53rd AIAA / ASME / ASCE / AHS / ASC Structures, Structural Dynamics, and Materials Conference, April 23-26, 2012, Honolulu, HI, USA.
36. J. Hamilton, S. Brennan, **Y.H. Sohn**, B. Davis, R. Delorme, K. Cho, "Microstructural Characteristics of High Rate Plastic Deformation in WE43 Magnesium Alloys," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Magnesium Technology 2012, March 11-15, 2012, Orlando, FL, USA.
37. K.A. Bermudez, S.T. Brennan, **Y.H. Sohn**, "Interdiffusion and Phase Formation in the Mg-Y System," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Magnesium Technology 2012, March 11-15, 2012, Orlando, FL, USA.
38. J. DeMarco, J. Karl, **Y.H. Sohn**, A. Gordon, "Modeling the Mechanical Response of Aluminum A359-SiC-30%," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Magnesium Technology 2012, March 11-15, 2012, Orlando, FL, USA.
39. Brennan, K. Bermudez, N. Kulkarni, **Y.H. Sohn**, "Diffusion Couple Investigation of the Mg-Zn System," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Phase Transformations and Deformation in Magnesium Alloys, March 11-15, 2012, Orlando, FL, USA.
40. A. Ewh, J. Dickson, D.D. Keiser, Jr., **Y.H. Sohn**, "Investigation of Effect of Zr Allotropic Transformation on Interdiffusion between Mo and Zr," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors, March 11-15, 2012, Orlando, FL, USA.
41. N. Kulkarni, P. Tod, B. Radhakrishnan, R. Warmack, **Y.H. Sohn**, J. Hunter, G.E. Murch, "Tracer Diffusion Database: Benefits and Techniques," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Computational Thermodynamics and Kinetics, March 11-15, 2012, Orlando, FL, USA.

42. B. Radhakrishnan, N. Kulkarni, **Y.H. Sohn**, J. Hunter, "Computation and Validation of Effective Diffusion Coefficient in a Magnesium Polycrystalline," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Computational Thermodynamics and Kinetics, March 11-15, 2012, Orlando, FL, USA.
43. Y. Park, K. Huang, J.R. Kennedy, B.H. Sencer, **Y.H. Sohn**, "Interdiffusion between U-10wt.% Zr and Fe Diffusion Couples Annealed at 903, 923, 953 and 973K," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors, March 11-15, 2012, Orlando, FL, USA.
44. K. Huang, Y. Park, D.D. Keiser, Jr., **Y.H. Sohn**, "Observations and analyses of diffusion couples, U-10 wt.% Mo vs. Zr," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors, March 11-15, 2012, Orlando, FL, USA.
45. E. Perez, D.D. Keiser, Jr., **Y.H. Sohn**, "TEM Study on the Phase Development and Microstructure in a U-7wt.%Mo vs. Al-7wt.%Ge Diffusion Couples," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Materials and Fuels for the Current and Advanced Nuclear Reactors, March 11-15, 2012, Orlando, FL, USA.
46. J. Tuggle, J. Hunter, N. Kulkarni, **Y.H. Sohn**, "Secondary Ion Mass Spectrometry for Mg Tracer Diffusion: Issues and Solutions," Presented at the 2012 TMS Annual Meeting and Exposition: Symposium on Magnesium Technology 2012, March 11-15, 2012, Orlando, FL, USA.
47. L. Zhou, S. Mukherjee, **Y.H. Sohn**, "Degradation of EV-PVD TBCs and (Ni,Pt)Al Coatings by Mixture of Sodium and Potassium Sulfate at 950°C," Presented at 36<sup>th</sup> International Conference and Exposition on Advanced Ceramics and Composites: Symposium on Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications, January 22-27, 2012, Daytona Beach, FL, USA.
48. W. Mohr, M. van den Bergh, K. Cho, M. Shaeffer, **Y.H. Sohn**, C. Hofmeister, J. Seaman, "Friction Stir Processing of Trimodal 5083 for Improved Toughness," Presented at Defense Manufacturing Conference (DMS 2011), November 28 – December 1, 2011, Anaheim, California, USA.
49. J. Tuggle, J. Hunter, J. Seay, A. Giordani, N. Kulkarni, B. Warmack, **Y.H. Sohn**, S. Brennan, K.R. Coffey, B. Radhakrishnan, P. Todd, "Secondary Ion Mass Spectrometry for Mg Tracer Diffusion: Issues and Solutions," Presented at Appalachian Regional Microscopy Society Meeting, October 20-21, 2011, Boone, NC, USA.
50. A. Giordani, J. Hunter, J. Tuggle, J. Seay, N. Kulkarni, B. Warmack, **Y.H. Sohn**, S. Brennan, K.R. Coffey, B. Radhakrishnan, P. Todd, "Measurement of Long (>10 $\mu$ m) Magnesium Self-Diffusion Length Using Secondary Ion Mass Spectroscopy," Presented at Appalachian Regional Microscopy Society Meeting, October 20-21, 2011, Boone, NC, USA.
51. D.D. Keiser, Jr., J.F. Jue, I. Glagolenko, G. Moore, C. Clark, B. Rabin, D. Wachs, A. Ewh, **Y.H. Sohn**, B. Yao, T. Totev, T. Wiencek, "Microstructural Characterization of Candidate Burnable Absorber Materials for Application in LEU U-Mo Fuel Plates," Presented at the Symposium on Materials Science Challenges for Nuclear Energy," Materials Science & Technology 2011 (MS&T 2011), October 16-20, 2011, Columbus, OH, USA.
52. K. Huang, D.D. Keiser, Jr., **Y.H. Sohn**, "Interdiffusion, Intrinsic Diffusion, Atomic Mobility and Vacancy Wind Effect in Uranium-Molybdenum Alloy," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI), Materials Science & Technology 2011 (MS&T 2011), October 16-20, 2011, Columbus, OH, USA.
53. A. Ewh, J. Dickson, B.H. Sencer, J.R. Kennedy, **Y.H. Sohn**, "Investigation on Effects of Zr Allotropic Transformation on Diffusion in the Fe-Zr System," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI), Materials Science & Technology 2011 (MS&T 2011), October 16-20, 2011, Columbus, OH, USA.
54. K. Huang, Y.J. Park, A. Ewh, B.H. Sencer, J.R. Kennedy, **Y.H. Sohn**, "Reaction Diffusion Between Uranium and Iron," Presented at the Symposium on Materials Science Challenges for Nuclear Energy," Materials Science & Technology 2011 (MS&T 2011), October 16-20, 2011, Columbus, OH, USA.

55. N. Kulkarni, J. Hunter, **Y.H. Sohn**, S. Brennan, K.R. Coffey, B. Radhakrishnan, P. Todd, G.E. Murch, I. Belova, "Tracer Diffusion Studies in Mg-Al-Zn," Presented at the Symposium on Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI), Materials Science & Technology 2011 (MS&T 2011), October 16-20, 2011, Columbus, OH, USA.
56. K. Huang, E. Perez, Y. Park, A. Ewh, **Y.H. Sohn**, "Metallic Nuclear Fuel Study at University of Central Florida," Presented at the Florida Energy Systems Consortium Summit: Florida Clean Energy Workshop, September 26-27, 2011, Gainesville, FL, USA.
57. **Y.H. Sohn**, "Microstructural Design of Trimodal Al Metal Matrix Composites," Presented at the US-Korea Summit on Science and Engineering of 40 Years (UKC-2011), August 10-14, 2011, Park City, Utah, USA.
58. J. Bush, R.R. Mohanty, **Y.H. Sohn**, "Phase-field Modeling of Thermotransport in U-Zr Alloys," Florida Society of Materials Simulations (FSMS) - 2011 Annual Meeting and Training Workshop, August 1-2, 2011, Orlando, FL, USA.
59. B. Radhakrishnan, N. Kulkarni, **Y.H. Sohn**, J. Hunter, C. Parish, "Modeling of Tracer Diffusion in Magnesium Polycrystals," Presented at 1st World Congress on Integrated Computational Materials Engineering, July 10-14, 2011, Seven Springs, PA, USA.
60. N.S. Kulkarni, P.J. Todd, B. Radhakrishnan, **Y.H. Sohn**, S. Brennan, K.R. Coffey, J. Hunter, G.E. Murch, I.V. Belova, "Tracer Diffusion Database for Mg-ICME," Presented at 1st World Congress on Integrated Computational Materials Engineering, July 10-14, 2011, Seven Springs, PA, USA.
61. D.D. Keiser, Jr., J. Jue, I. Glagolenko, G. Moore, C. Clark, B. Rabin, A. Ewh, B. Yao, Y.H. Sohn, T. Totev, T. Wiencek, "Microstructural Characterization of Burnable Absorber Materials Being Evaluated for Application in LEU U-Mo Fuel Plates," Presented at the European Research Reactor Conference, March 20 - 24, 2011, Rome, Italy.
62. B. Yao, T. Patterson, **Y.H. Sohn**, C. Smith, M. van den Burgh, "A Size Effect Study on the Cryomilled Al+B.C Agglomerates in Trimodal Aluminum Metal Matrix Composites," Presented at 2011 TMS Annual Meeting & Exhibition: Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites, February 27 - March 3, 2011, San Diego, California, USA.
63. Yao, K. Cho, **Y.H. Sohn**, "Strain-Induced Grain Growth of Cryomilled Nanocrystalline Al in Trimodal Al Composites During Forging Process," Presented at 2011 TMS Annual Meeting & Exhibition: Symposium on Recent Developments in the Processing, Characterization, Properties and Performance of Metal Matrix Composites, February 27 - March 3, 2011, San Diego, California, USA.
64. R.R. Mohanty, J. Bush, M. Okuniewski, **Y.H. Sohn**, "Thermotransport in  $\gamma$ (bcc) U-Zr alloys: A Phase-field Model Study," Presented at 2011 TMS Annual Meeting & Exhibition: Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science in honor of Prof. John Agren, February 27 - March 3, 2011, San Diego, California, USA.
65. A. Ewh, J. Dickson, B. Sencer, R. Kennedy, **Y.H. Sohn**, "Interdiffusion Investigation of Mo and Zr in Fe, Fe-Cr and Fe-Ni-Cr Alloys at 650, 750, and 850°C," Presented at 2011 TMS Annual Meeting & Exhibition: Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science in honor of Prof. John Agren, February 27 - March 3, 2011, San Diego, California, USA.
66. S. Brennan, K. Bermudez, N. Kulkarni, **Y.H. Sohn**, "Growth Kinetics of  $\gamma$ -Al<sub>3</sub>Mg<sub>7</sub> and  $\beta$ -AlMg<sub>2</sub> Intermetallic Phases in Mg vs. Al Diffusion," Presented at 2011 TMS Annual Meeting & Exhibition: Symposium on Magnesium Technology 2011, February 27 - March 3, 2011, San Diego, CA, U.S.A.
67. M. Yang, D. Belsito, B. Yao, **Y.H. Sohn**, R.D. Sisson, Jr., "Simulation of the Ferritic Nitriding Process," Presented at Symposium on Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V), Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
68. T. Patterson, C. Hofmeister, B. Yao, "Stability of Nanocrystalline Aluminum Grain Size in Cryomilled AA5083/B.C Metal Matrix Composites," Presented at Symposium on Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V), Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010,

Houston, Texas, USA.

69. T. Patterson, B. Yao, C. Hofmeister, T. Zahrah, **Y.H. Sohn**, "Hot Isostatic Pressing of Trimodal Aluminum Metal Matrix Composites," Presented at Symposium on Fundamentals and Characterization: Recent Advances in Structural Characterization of Materials, Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
70. T. Patterson, B. Yao, C. Hofmeister, B. Mohr, B. Thompson, **Y.H. Sohn**, "Microstructural Development in Friction Stir Welded Trimodal Aluminum Metal-Matrix Composite," Presented at Symposium on High Strain Rate Behaviors of Composites and Heterogeneous Materials: Experiments, Modeling, and Simulation, Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
71. B. Yao, H. Heinrich, K. Cho, **Y.H. Sohn**, "Hollow-Cone Dark-Field Transmission Electron Microscopy for Grain Size and Dislocation Density Characterization of Ultra-Fine Nanocrystalline Materials," Presented at Symposium on Fundamentals and Characterization: Recent Advances in Structural Characterization of Materials, Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
72. A. Ewh, **Y.H. Sohn**, D.D. Keiser, Jr., "Effective Impurity Diffusion Investigation of Zr in Polycrystalline U-Mo at 550°, 600° and 650°C," Presented at Symposium on Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V), Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
73. N. Kulkarni, P. Todd, **Y.H. Sohn**, S. Brennan, K. Coffey, M. Klimov, G.E. Murch, I. Belova, "Self-Diffusion Studies in Magnesium using Secondary Ion Mass Spectroscopy," Presented at Symposium on Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V), Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
74. S. Mukherjee, P. Mohan, K.S. Murphy, **Y.H. Sohn**, "Evolution of Microstructure and Residual Stress in Electron Beam Physical Vapor Deposited Thermal Barrier Coatings," Presented at Symposium on Surface Protection for Enhanced Materials Performance, Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
75. H. Choi, J. Jedlinski, Y.H. Sohn, "Effect of yttrium on growth rate, phase transformations and residual stress of alumina scales developed on polycrystalline  $\beta$ -NiAl at 1100°C," Presented at Symposium on Surface Protection for Enhanced Materials Performance, Materials Science & Technology 2010 (MS&T2010), October 17-21, 2010, Houston, Texas, USA.
76. E. Perez, B. Yao, D.D. Keiser, Jr., Y.H. Sohn, "Role of Si on Interdiffusion Between U-Mo and Al-Si Alloys," The Nuclear Materials Conference, October 4-7, 2010, ZKM, Karlsruhe, Germany.
77. R.R. Mohanty, J. Bush, M. Okuniewski, **Y.H. Sohn**, "Phase-field Simulation of Constituent Redistribution in bcc- $\gamma$  Phase of U-Zr Alloys due to an Applied Temperature Gradient," The Nuclear Materials Conference, October 4-7, 2010, ZKM, Karlsruhe, Germany.
78. C. Bargraser, H.J. Choi, S. Mukherjee, **Y.H. Sohn**, "Development of Prime-Reliant Thermal Barrier Coatings via Phase Field Modeling and Experimental Validation," Florida Center for Advanced Aero-Propulsion Annual Symposium and Exposition, August 9-10, 2010, Tallahassee, Florida, USA.
79. I.V. Belova, A.R. Allnatt, **Y.H. Sohn**, N.S. Kulkarni, G.E. Murch, "Enhancement Factors for Interdiffusion in FCC Alloy Diffusion Couples," Presented at the 6<sup>th</sup> International Conference on Diffusion in Solids and Liquids (DSL-2010), July 5-7, Paris, France.
80. V.K. Champagne, M. Trexler, **Y.H. Sohn**, G.E. Kim, "Cold Spray Consolidation of Nanostructured AA5083 Aluminum Powders," Presented at the 18<sup>th</sup> International Conference on Composite/Nano Engineering, July 4-10, 2010, Anchorage, Alaska, USA,
81. B. Yao, C. Hofmeister, **Y.H. Sohn**, K. Cho, "Analytical Characterization and First-Principle Calculation of Dispersoids in Trimodal Aluminum Metal Matrix Composites," To be Presented at the 2010 International Conference on Powder Metallurgy & Particulate Materials," June 27-30, 2010, Hollywood, FL, USA.
82. J. Jedlinski, H.J. Choi, B. Yao, **Y.H. Sohn**, M. Konopka, M. Nocun, G. Smola, A. Bernasik, J. Camra, K.

- Kowalski, G. Borchardt, "Development of the Oxide Scale during High Temperature Oxidation of  $\beta$ -NiAl and Yttrium-Implanted  $\beta$ -NiAl at 1100°C," Presented at Engineering Conference International – Surface Stability of Materials in High-Temperature Aggressive Environments, May 16-20, 2010, Vail, Colorado, USA.
83. H.J. Choi, J. Jedlinski, **Y.H. Sohn**, "Development of Thermally Grown Oxide on  $\beta$ -NiAl During Initial Stages of Oxidation at 1100°C," Presented at 2010 International Conference on Metallurgical Coatings and Thin Films, April 25 – 29, 2010, San Diego, California, USA.
  84. P. Mohan, T. Patterson, **Y.H. Sohn**, "Durability Assessment of Electrophoretically Deposited Environmental Barrier Overlay for Air Plasma Sprayed Thermal Barrier Coatings," Presented at 2010 International Conference on Metallurgical Coatings and Thin Films, April 25 – 29, 2010, San Diego, California, USA.
  85. C. Bargraser, P. Mohan, K.A. Lee, **Y.H. Sohn**, B.I. Yang, J.I. Suk, S.J. Choe, "Lifetime Approximation based on Quantitative Microstructural Analysis for Air Plasma Sprayed Dense Thermal Barrier Coatings," Presented at 2010 International Conference on Metallurgical Coatings and Thin Films, April 25 – 29, 2010, San Diego, California, USA.
  86. C. Hofmeister, B. Yao, **Y.H. Sohn**, T. Delahanty, M. van den Bergh, K. Cho, "Composition and Structure of Nitrogen-containing Dispersoids in Tri-modal Metal Matrix Composites," Presented at 2010 TMS Annual Meeting & Exhibition: 6<sup>th</sup> International Symposium on Ultrafine Grained Materials, February 14-18, 2010, Seattle, WA, U.S.A.
  87. S. Brennan, A.P. Warren, K.R. Coffey, **Y.H. Sohn**, N. Kulkarni, P. Todd, "Tracer Diffusion Studies of Magnesium and Zinc in Mg-Al-Zn Alloys," Presented at 2010 TMS Annual Meeting & Exhibition: Symposium on Magnesium Technology 2010, February 14-18, 2010, Seattle, WA, U.S.A.
  88. E. Perez, **Y.H. Sohn**, D.D. Keiser, Jr., "Growth Kinetics and Phase Development in Diffusion Couples: U-Mo vs. Al-Si," Presented at 2010 TMS Annual Meeting & Exhibition: Symposium on Nuclear Energy Processes and Policies, February 14-18, 2010, Seattle, WA, U.S.A.
  89. D.D. Keiser, Jr., J. Jue, B. Yao, E. Perez, **Y.H. Sohn**, "TEM Characterization of a Monolithic U-Mo Plate-Type Nuclear Fuels," Presented at 2010 TMS Annual Meeting & Exhibition: Symposium on Nuclear Energy Processes and Policies, February 14-18, 2010, Seattle, WA, U.S.A.
  90. C. Bargraiser, P. Mohan, H.J. Choi, S. Mukherjee, **Y.H. Sohn**, "Failure Assessment of Dense Vertically Cracked Thermal Barrier Coatings by Quantitative Microstructural Analysis," Presented at the 34<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 24 – 29, 2010, Daytona Beach, Florida, USA.
  91. P. Mohan, T. Patterson, **Y.H. Sohn**, "Environmental Barrier Overlay for Thermal Barrier Coatings by Electrophoretic Deposition," Presented at the 34<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 24 – 29, 2010, Daytona Beach, Florida, USA.
  92. D.D. Keiser, Jr., B. Yao, E. Perez, **Y.H. Sohn**, "SEM and TEM Characterization of As-Fabricated U-Mo Dispersion Fuel Plates," Presented at 31<sup>st</sup> International Meeting on Reduced Enrichment for Research and Test Reactors (RERTR 2009), November 1-5, 2009, Beijing, China.
  93. E. Perez, **Y.H. Sohn**, D.D. Keiser, Jr., "Growth Kinetics and Phase Development in Diffusion Couples: U-Mo vs. Al-Si," To be Presented at 31<sup>st</sup> International Meeting on Reduced Enrichment for Research and Test Reactors (RERTR 2009), November 1-5, 2009, Beijing, China.
  94. **Y.H. Sohn**, H.J. Choi, P. Mohan, C. Bargraser, S. Mukherjee, "Research Activities at UCF: Thermal Barrier Coatings Development," Presented at the University Turbine Systems Research Peer Review Workshop VII, October 27-29, 2009, Orlando, Florida, U.S.A.
  95. C. Bargraser, P. Mohan, H.J. Choi, **Y.H. Sohn**, B.I. Yang, J.I. Suk, S.J. Choi, "Quantitative Microstructural Analysis of Degradation in Air Plasma Sprayed Thermal Barrier Coatings," Presented at Materials Science and Technology 2009 Conference, October 25-29, 2009, Pittsburgh, Pennsylvania, U.S.A.

96. S. Brennan, A.P. Warren, M. Klimov, K.R. Coffey, **Y.H. Sohn**, N. Kulkarni, P. Todd, "Determination of Aluminum, Zinc and Manganese Impurity Diffusion Coefficients in Magnesium," Presented at Materials Science and Technology 2009 Conference, October 25-29, 2009, Pittsburgh, Pennsylvania, U.S.A.
97. E. Perez, D.D. Keiser Jr., **Y.H. Sohn**, "Effects of Silicon on Interdiffusion Behavior of U-7Mo, U-10Mo and U-12Mo Alloys in Contact with Al, Al-2Si, and Al-5Si alloys at 550°C," Presented at Materials Science and Technology 2009 Conference, October 25-29, 2009, Pittsburgh, Pennsylvania, U.S.A.
98. B. Yao, C. Hofmeister, T.J. Patterson, **Y.H. Sohn**, G. Wolfe, M. van den Bergh, K. Cho, "Effects of Processing on The Microstructure and Properties of The Commercial-Scale Tri-Modal Al Metal Matrix Composites," Presented at Materials Science and Technology 2009 Conference, October 25-29, 2009, Pittsburgh, Pennsylvania, U.S.A.
99. T. Patterson, **Y.H. Sohn**, "Evolution of Nanostructure in Trimodal Aluminum Metal Matrix Composites After Friction Stir Weld," 2009 NanoFlorida: 2nd Annual NanoScience Technology Symposium, September 25-26, 2009, University of Central Florida, Orlando, Florida, U.S.A.
100. C. Hofmeister, **Y.H. Sohn**, "Composition and Structure of Nitrogen-Containing Dispersoids in Trimodal Metal Matrix Composites," 2009 NanoFlorida: 2nd Annual NanoScience Technology Symposium, September 25-26, 2009, University of Central Florida, Orlando, Florida, U.S.A.
101. B. Yao, **Y.H. Sohn**, "Multiscale Structural Features of Commercial-Scale Lightweight Nanoengineered Trimodal Aluminum Metal Matrix Composites," 2009 NanoFlorida: 2nd Annual NanoScience Technology Symposium, September 25-26, 2009, University of Central Florida, Orlando, Florida, U.S.A.
102. R. Mohanty, P. Mohan, C. Bargraiser, S. Mukherjee, H.J. Choi, Y.H. Sohn, "Development of Prime Reliant Thermal Barrier Coatings via Phase Field Modeling and Experimental Validation," 1<sup>st</sup> Technical Symposium of Florida Center for Advanced Aero-Propulsion, August 13-14, 2009, Orlando, Florida, USA.
103. S. Brennan, M. Klimov, **Y.H. Sohn**, N. Kulkarni, P. Todd, "Tracer Diffusion Studies in Magnesium," Gordon Research Conference on Physical Metallurgy - Integrating Computational Materials Science And Engineering, August 2-7, 2009, Andover, New Hampshire, U.S.A.
104. P. Rohatgi, B. Schultz, B. Yao, Y.H. Sohn, K. Cho, "Interface Structure and Mechanical Properties of 3D Carbon Fiber Weave Reinforced A206 Aluminum Alloy Composites," Presented at the 17<sup>th</sup> International Conference on Composite/Nano Engineering, July 26 – August 1, 2009, Honolulu, Hawaii, USA.
105. B. Yao, T. Patterson, C. Hofmeister, H. Heinrich, Y.H. Sohn, G. Wolfe, M. van den Burgh, K. Cho, "Engineering Properties via Microstructure Design of Commercial Scale Lightweight Nanoengineered Aluminum Composites," Presented at the 17<sup>th</sup> International Conference on Composite/Nano Engineering, July 26 – August 1, 2009, Honolulu, Hawaii, USA.
106. M. van den Burgh, C. Smith, Y.H. Sohn, B.S. Majumdar, K. Cho, "The Processing and Characteristics of Tri-Modal Aluminum Metal-Matrix-Composites," Presented at the 17<sup>th</sup> International Conference on Composite/Nano Engineering, July 26 – August 1, 2009, Honolulu, Hawaii, USA.
107. N. Garimella, H.J. Choi, **Y.H. Sohn**, "Determination of Average Ternary Interdiffusion Coefficients using Moments of Interdiffusion Flux and Concentration Profiles," Presented at the 5<sup>th</sup> International Conference on Diffusion in Solids and Liquids (DSL-2009), June 24-26, 2009, Rome, Italy.
108. N. Garimella, H.J. Choi, **Y.H. Sohn**, "Site Preference and Diffusion in Ni<sub>3</sub>Al Alloyed with Ir, Ta or Re at 1200°C," Presented at the 5<sup>th</sup> International Conference on Diffusion in Solids and Liquids (DSL-2009), June 24-26, 2009, Rome, Italy.
109. G.C. Jeong, H.J. Choi, **Y.H. Sohn**, S.I. Kwun "Effects of combined surface modification on adhesion strength of CrN coatings for STS420," Presented at the 5<sup>th</sup> International Conference on Diffusion in Solids and Liquids (DSL-2009), June 24-26, 2009, Rome, Italy.
110. R. Mohanty, **Y.H. Sohn**, "Phase Field Approach to Microstructural Modeling and Life Prediction of High Temperature Coatings," Presented at the 2009 Gas Turbine Technical Congress and Exposition (ASME-IGTI TurboExpo 2009), June 8-12, 2009, Orlando, FL, U.S.A.

111. P. Mohan, T. Patterson, **Y.H. Sohn**, "Electrophoretic Deposition of Environmental Barrier Overlay Coating for Ytria-Stabilized Zirconia Thermal Barrier Coatings," Presented at the 2009 Gas Turbine Technical Congress and Exposition (ASME-IGTI TurboExpo 2009), June 8-12, 2009, Orlando, FL, U.S.A.
112. P. Mohan, T. Patterson, **Y.H. Sohn**, "Electrophoretically Deposited Alumina as Protective Overlay for Thermal Barrier Coatings Against CMAS Degradation," Presented at 2009 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2009, San Diego, California, USA.
113. D.S. Lim, H.J. Choi, M.J. McNallan, **Y.H. Sohn**, "Effect of Hydrogen on the Mechanical and Structural Properties of SiC-Derived Carbon Films," Presented at 2009 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2009, San Diego, California, USA.
114. G.C. Jeong, **Y.H. Sohn**, S. Kwun, "Influence of Nitrogen Ion Implantation on Hard Coating Layer to Improve Adhesion Strength Using Combined Surface Modification," Presented at 2009 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2009, San Diego, California, USA.
115. R. Mohanty, **Y.H. Sohn**, "Phase Field Modeling of Microstructure Evolution Under Applied Temperature Gradient," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
116. E. Perez, B. Kempshall, A. Ewh, D.D. Keiser, **Y.H. Sohn**, "Interdiffusion Microstructure of U-Mo vs. Al Diffusion Couples Annealed at 600°C for 24 hours," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
117. E. Perez, D.D. Keiser, **Y.H. Sohn**, "Interdiffusion and Microstructural Development of U-7Mo, U-10Mo and U-12Mo Alloys in Contact with Al, Al-2Si, Al-5Si, 6061Al and 4043Al alloys at 550°C," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
118. N. Garimella, M.P. Brady, **Y.H. Sohn**, "Isothermal Oxidation of  $\gamma$  (fcc) Ni-Cr-X and  $\gamma$  (fcc) Fe-Ni-Cr-X (X = Al, Si, Ge or Pd) Alloys at 800°C," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
119. N. Garimella, **Y.H. Sohn**, "Site Preference and Diffusion in NiAl Alloyed with Ir, Ta or Re at 1200°C," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
120. A. Ewh, E. Perez, D.D. Keiser, Jr., **Y.H. Sohn**, "Interdiffusion in U-Mo-X (X = Nb, Ti, Zr) vs. Al Diffusion Couples," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
121. B. Yao, T. Patterson, C. Hofmeister, **Y.H. Sohn**, C.A. Smith, M. van den Bergh, K. Cho, "Microstructural Characterization of Tri-Modal Aluminum Alloy Composites," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Nanostructured Composites, February 15-19, 2009, San Francisco, CA, U.S.A.
122. N. Kulkarni, P. Todd, **Y.H. Sohn**, "Isotopic Diffusion Studies in Mg-rich Light Metal Alloy Systems," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Diffusion in Materials for Energy Technologies, February 15-19, 2009, San Francisco, CA, U.S.A.
123. C. Hofmeister, B. Yao, T. Patterson, **Y.H. Sohn**, C.A. Smith, M. van den Bergh, K. Cho, "Microscopic and Spectroscopic Characterization of Cryomilled Nanostructure of Aluminum Alloy and B.C Powders," Presented at 2009 TMS Annual Meeting & Exhibition: Symposium on Nanostructured Composites, February 15-19, 2009, San Francisco, CA, U.S.A.
124. P. Mohan, T. Patterson, V.H. Desai, **Y.H. Sohn**, "Sulfate-Induced High Temperature Degradation of Air Plasma Sprayed Thermal Barrier Coatings," Presented at the 33rd Annual International Conference on Advanced Ceramics and Composites, January 18 – 23, 2009, Daytona Beach, Florida, USA.

125. T. Patterson, V.H. Desai, **Y.H. Sohn**, "Thermal Conductivity and Coefficients of Thermal Expansion of Free-Standing Air Plasma Sprayed CoNiCrAlY Coatings," Presented at the 33rd Annual International Conference on Advanced Ceramics and Composites, January 18 – 23, 2009, Daytona Beach, Florida, USA.
126. R.R. Mohanty, **Y.H. Sohn**, "Phase Field Modeling of Interdiffusion Microstructure in Ni-Cr-Al Diffusion Couples," Presented at the 47<sup>th</sup> American Institute of Aeronautics and Astronautics: Aerospace Sciences Meeting, January 5 – 8, 2009, Orlando, FL, USA.
127. J. Liu, **Y.H. Sohn**, K.S. Murphy, "Mechanisms of Lifetime Improvement in Thermal Barrier Coatings with Hf and /or Y Modified Superalloy Substrates," Presented at the 47<sup>th</sup> American Institute of Aeronautics and Astronautics: Aerospace Sciences Meeting, January 5 – 8, 2009, Orlando, FL, USA.
128. P. Mohan, V.H. Desai, **Y.H. Sohn**, "Degradation of Yttria Stabilized Zirconia Thermal Barrier Coatings by Molten CMAS (CaO-MgO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>) Deposits," Presented at the 47<sup>th</sup> American Institute of Aeronautics and Astronautics: Aerospace Sciences Meeting, January 5 – 8, 2009, Orlando, FL, USA.
129. R.R. Mohanty, **Y.H. Sohn**, "Phase Field Modeling of Interdiffusion Induced Microstructure Evolution Under Multiple Driving Forces," The Fourth International Conference on Multiscale Materials Modeling – MMM2008, October 27-31, 2008, Tallahassee, FL, USA.
130. A. Ewh, D.D. Keiser, Jr., **Y.H. Sohn**, "Phase Constituents and Microstructure of Phase Constituents and Microstructure of Ternary Uranium-Alloys and Their Interdiffusion with Al," Presented at Materials Science and Technology 2008 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK III, October 5-9, 2008, Pittsburgh, Pennsylvania, U.S.A.
131. E. Perez, D.D. Keiser, Jr., **Y.H. Sohn**, "Interdiffusion Microstructure in U-Mo vs. Al Diffusion Couples," Presented at Materials Science and Technology 2008 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK III, October 5-9, 2008, Pittsburgh, Pennsylvania, U.S.A.
132. R. Mohanty, **Y.H. Sohn**, "Phase-Field Simulation of Microstructural Development Under a Temperature Gradient," Presented at Materials Science and Technology 2008 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK III, October 5-9, 2008, Pittsburgh, Pennsylvania, U.S.A.
133. Z. Yang, W. Fei, L. Zhai, **Y.H. Sohn**, "Characterization and Aqueous Colloidal Processing of Nano-Tungsten Powders," Presented at NanoFlorida 2008 - First Annual NanoScience Technology Symposium, Sept 26 - 27, 2008, Orlando, Florida
134. W. Fei, Z. Yang, L. Zhai, **Y.H. Sohn**, K. Cho, E. Klier, "Consolidation of Tungsten Nanopowders via Liquid Casting and Sintering," Presented at International Conference on Tungsten, Refractory and Hardmaterials VII, June 8 – 12, 2008, Washington D.C., USA.
135. Z. Yang, W. Fei, L. Zhai, **Y.H. Sohn**, K. Cho, E. Klier, "Microscopic and Spectroscopic Characterization of Nano-Tungsten Powders," Presented at International Conference on Tungsten, Refractory and Hardmaterials VII, June 8 – 12, 2008, Washington D.C., USA.
136. N. Garimella, M.P. Brady, **Y.H. Sohn**, "Ternary and Quaternary Interdiffusion in Ni-Cr-X and Fe-Ni-Cr-X (X = Al, Si, Ge or Pd) Alloys at 700° and 900°C," Presented at 7th International Symposium on High-Temperature Corrosion and Protection of Materials, May 18-23, 2008, Lez Embiez, France.
137. R.R. Mohanty, **Y.H. Sohn**, "Phase Field Modeling of Interdiffusion Microstructure in Ni-Cr-Al Diffusion Couples," Presented at 7th International Symposium on High-Temperature Corrosion and Protection of Materials, May 18-23, 2008, Lez Embiez, France.
138. J. Liu, **Y.H. Sohn**, K.S. Murphy, "Mechanisms of Lifetime Improvement in Thermal Barrier Coatings with Hf and /or Y Modified Superalloy Substrates," Presented at 7th International Symposium on High-Temperature Corrosion and Protection of Materials, May 18-23, 2008, Lez Embiez, France.
139. T. Patterson, B. Jayaraj, J. Liu, A. Leon, **Y.H. Sohn**, "Oxidation Behavior of Air Plasma Sprayed NiCoCrAlY Bond Coats in Air Plasma Sprayed Thermal Barrier Coatings," Presented at 7th International Symposium on High-Temperature Corrosion and Protection of Materials, May 18-23, 2008, Lez Embiez, France.



140. A. Leon, **Y.H. Sohn**, "Oxidation Behavior of Air Plasma Sprayed NiCoCrAlY Bond Coats in Air Plasma Sprayed Thermal Barrier Coatings," Presented at the 3<sup>rd</sup> NcNair Research Symposium, May 20 – 22, 2008, University of Puerto Rico at Humacao, Humacao, Puerto Rico, USA.
141. R.R. Mohanty, **Y.H. Sohn**, "Microstructural Stability of *fcc-γ+B2-β* Coatings on  $\gamma$  Substrate in Ni-Cr-Al System – A Phase Field Model Study," Presented at 2008 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2008, San Diego, California, USA.
142. P. Mohan, V.H. Desai, **Y.H. Sohn**, "Degradation of Air Plasma Sprayed CoNiCrAlY Bond Coats in Thermal Barrier Coatings by Vanadium, Phosphorus and Sodium Compounds," Presented at 2008 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2008, San Diego, California, USA.
143. J. Liu, K.S. Murphy, Y.H. Sohn, "Mechanisms of Lifetime Improvement in Thermal Barrier Coatings with Hf and/or Y Modified Superalloy Substrates," Presented at 2008 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2008, San Diego, California, USA.
144. T. Patterson, A. Leon, B. Jayaraj, J. Liu, **Y.H. Sohn**, "Oxidation Behavior of Air Plasma Sprayed NiCoCrAlY Bond Coats in Air Plasma Sprayed Thermal Barrier Coatings," Presented at 2008 International Conference on Metallurgical Coatings and Thin Films, April 28 – May 2, 2008, San Diego, California, USA.
145. N. Garimella, M. Ikeda, M. Ode, H. Murakami, **Y.H. Sohn**, "Ternary Interdiffusion in Ni<sub>3</sub>Al with Ir or Ta Additions," Presented TMS 2008: 137<sup>th</sup> Annual Meeting and Exposition, March 9 – 13, 2008, New Orleans, Louisiana, USA.
146. N.S. Kulkarni, P.J. Todd, **Y.H. Sohn**, "Diffusion Databases for Mg: Integrated Computational Materials Engineering," Presented TMS 2008: 137<sup>th</sup> Annual Meeting and Exposition, March 9 – 13, 2008, New Orleans, Louisiana, USA.
147. N. Garimella, M.P. Brady, **Y.H. Sohn**, "Interdiffusion in  $\gamma$ (fcc) Fe-Ni-Cr-X (X = Al, Si or Ge) Alloys at 700°C and 900°C," Presented TMS 2008: 137<sup>th</sup> Annual Meeting and Exposition, March 9 – 13, 2008, New Orleans, Louisiana, USA.
148. J. Liu, K.S. Murphy, **Y.H. Sohn**, "Mechanisms of Lifetime Improvement in Thermal Barrier Coatings with Hf and/or Y Modified CMSX-4 Superalloy Substrates," Presented TMS 2008: 137<sup>th</sup> Annual Meeting and Exposition, March 9 – 13, 2008, New Orleans, Louisiana, USA.
149. J. Liu, P. Mohan, **Y.H. Sohn**, "Selected Microstructural Observations in Thermal Barrier Coatings by Transmission Electron Microscopy," Presented at the 32nd Annual International Conference on Advanced Ceramics and Composites, January 27 – February 1, 2008, Daytona Beach, Florida, USA.
150. J. Liu, P. Mohan, A. Ewh, **Y.H. Sohn**, "Microstructural Analysis of Thermal Barrier Coatings and Ni-base Superalloys After Syngas Exposure," Presented at the 32nd Annual International Conference on Advanced Ceramics and Composites, January 27 – February 1, 2008, Daytona Beach, Florida, USA.
151. P. Mohan, J. Liu, B. Yuan, V.H. Desai, **Y.H. Sohn**, "Microstructural Analysis of CMAS (CaO-MgO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>) Induced Degradation in Yttria Stabilized Zirconia Thermal Barrier Coatings," Presented at the 32nd Annual International Conference on Advanced Ceramics and Composites, January 27 – February 1, 2008, Daytona Beach, Florida, USA.
152. **Y.H. Sohn**, J.W. Byeon, M.P. Brady, S.H. Kwon, K.B. Park, J.Y. Yu, S.H. Rhee, C.K. Lee, "Growth Stress of Al<sub>2</sub>O<sub>3</sub> Scale Developed on Ti<sub>3</sub>AlC during High Temperature Oxidation in Air," Presented at the 32nd Annual International Conference on Advanced Ceramics and Composites, January 27 – February 1, 2008, Daytona Beach, Florida, USA.
153. R.R. Mohanty, **Y.H. Sohn**, "Microstructural Modeling and Life Prediction of Thermal Barrier Coatings by Phase Field Simulation," Presented at the 32nd Annual International Conference on Advanced Ceramics and Composites, January 27 – February 1, 2008, Daytona Beach, Florida, USA.
154. N. Garimella, M. Ikeda, M. Ode, H. Murakami, **Y.H. Sohn**, "Ternary Interdiffusion in Ni<sub>3</sub>Al with Ir Additions," Presented at Materials Science and Technology 2007 Conference and Exhibition, September 16-20, 2007, Detroit, Michigan, USA.

155. E. Perez, A. Ewh, N. Hotaling, D.D. Keiser, **Y.H. Sohn**, "Phase Constituents in Al-rich U-Mo-Al Alloys," Presented at Materials Science and Technology 2007 Conference and Exhibition, September 16-20, 2007, Detroit, Michigan, USA.
156. R. Nandur, M. Hirai, A. Kumar, **Y.H. Sohn**, "Thermal Barrier Coatings for Gas Turbine Engine Applications," Presented at the 68<sup>th</sup> Annual Meeting of Japan Society of Applied Physics, September, 4-8, 2007, Hokkaido, Japan.
157. N. Garimella, M.P. Brady, **Y.H. Sohn**, "Interdiffusion in Ni-Cr-X and Fe-Ni-Cr-X (X = Al, Si, Ge or Pd) Alloys at 700° and 900°C," Presented at Third International Conference on Diffusion in Solids and Liquids, July 4-7, 2007, Algarve, Portugal.
158. E. Perez, N. Hotaling, A. Ewh, D.D. Keiser, **Y.H. Sohn**, "Diffusional Growth of Reaction Layer in Diffusion Couples Between U-Mo and Al Alloys," Presented at Third International Conference on Diffusion in Solids and Liquids, July 4-7, 2007, Algarve, Portugal.
159. R. Mohanty, **Y.H. Sohn**, "Interdiffusion Microstructures in Binary and Ternary Diffusion Couples," Presented at Third International Conference on Diffusion in Solids and Liquids, July 4-7, 2007, Algarve, Portugal.
160. M. Ode, M. Ikeda, H. Murakami, N. Garimella, **Y.H. Sohn**, "Ternary diffusion in L1<sub>2</sub> structure in Al-Ir-Ni Alloys," Presented at Third International Conference on Diffusion in Solids and Liquids, July 4-7, 2007, Algarve, Portugal.
161. R. Mohanty, **Y.H. Sohn**, "Simulation of Interdiffusion Microstructure Evolution in Binary and Ternary Diffusion Couples using Phase Field Model," Florida Society of Materials Simulations (FSMS) 2007 Annual Meeting and Training Workshop, June 7-8, 2007, Tampa, FL, USA.
162. First Prize Award for Presentation at Florida Society of Materials Simulations (FSMS) 2007 Annual Meeting and Training Workshop, June 7-8, 2007, Tampa, FL, USA.
163. J. Liu, K.S. Murphy, **Y.H. Sohn**, "Thermal Barrier Coatings with Hf and/or Y Modified Superalloy Substrate," Presented at International Thermal Spray Conference and Exposition, May 14-16, 2007, Beijing, China.
164. B. Jayaraj, J. Liu, **Y.H. Sohn**, "Microstructural Development of Thermal Barrier Coatings with Air Plasma Sprayed NiCoCrAlY Bond Coats," Presented at International Thermal Spray Conference and Exposition, May 14-16, 2007, Beijing, China.
165. P. Mohan, B. Yuan, V.H. Desai, **Y.H. Sohn**, "Degradation of Yttria Stabilized Zirconia Topcoat in Thermal Barrier Coatings by V<sub>2</sub>O<sub>5</sub> and P<sub>2</sub>O<sub>5</sub>," Presented at the 2007 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 23-27, 2007, San Diego, California, USA.
166. E. Perez, N. Hotaling, A. Ewh, **Y.H. Sohn**, D.D. Keiser, "Interdiffusion behavior in U-7, 10 and 12 wt.%Mo Alloys in Contact with Al Alloys at 500 and 600°C," Presented TMS 2007: 136<sup>th</sup> Annual Meeting and Exposition, February 25 – March 1, 2007, Orlando, FL, USA.
167. R. R. Mohanty, **Y.H. Sohn**, "Experimental Observations and Phase-Field Modeling of Interdiffusion Microstructure in Ni-Cr-Al and Fe-Ni-Al Two-Phase Diffusion Couples," Presented TMS 2007: 136<sup>th</sup> Annual Meeting and Exposition, February 25 – March 1, 2007, Orlando, FL, USA.
168. N. Garimella, **Y.H. Sohn**, "Determination of Average Ternary Interdiffusion Coefficients using Integration of Interdiffusion Fluxes," Presented TMS 2007: 136<sup>th</sup> Annual Meeting and Exposition, February 25 – March 1, 2007, Orlando, FL, USA.
169. N. Garimella M.P. Brady, **Y.H. Sohn**, "Interdiffusion in Ni-Cr-X and Fe-Ni-Cr-X (X = Al, Si, Ge or Pd) Alloys at 700° and 900°C," Presented TMS 2007: 136<sup>th</sup> Annual Meeting and Exposition, February 25 – March 1, 2007, Orlando, FL, USA.

170. M.P. Brady, Y. Yamamoto, B. Pint, C. Liu, Z.P. Lu, P. Maziasz, N. Garimella, **Y.H. Sohn**, "Alumina-forming, Creep Resistant Austenitic Stainless Steels: Part 2 Oxidation Mechanism," Presented TMS 2007: 136<sup>th</sup> Annual Meeting and Exposition, February 25 – March 1, 2007, Orlando, FL, USA.
171. P. Mohan, B. Yuan, V.H. Desai, **Y.H. Sohn**, "Degradation Mechanisms of Yttria Stabilized Zirconia Topcoat in Thermal Barrier Coatings by V<sub>2</sub>O<sub>5</sub>," Presented TMS 2007: 136<sup>th</sup> Annual Meeting and Exposition, February 25 – March 1, 2007, Orlando, FL, USA.
172. J. Liu, K.S. Murphy **Y.H. Sohn**, "Microstructural Development of Thermal Barrier Coatings with Hf and/or Y Modified Superalloy Substrates during Furnace Thermal Cycling," Presented at the 31<sup>st</sup> Annual International Conference on Advanced Ceramics and Structures, January 21-26, 2007, Daytona Beach, Florida, USA.
173. J.W. Byeon, J. Liu, M. Hopkins, W. Fischer, K.B. Park, M. Radovic, M.P. Brady, **Y.H. Sohn**, "Residual Stress and Phase Transformations in Protective Oxide Scale Developed on TiAlC during High Temperature Oxidation in Air," Presented at the 31<sup>st</sup> Annual International Conference on Advanced Ceramics and Structures, January 21-26, 2007, Daytona Beach, Florida, USA.
174. J. Liu, B. Jayaraj, **Y.H. Sohn**, "Selected Microstructural Observations in Thermal Barrier Coatings by Transmission Electron Microscopy," Presented at Materials Science & Technology (MS&T) 2006: Symposium on Surface Protection for Enhanced Materials Performances, October 15-19, 2006, Cincinnati, Ohio.
175. **Y.H. Sohn**, "Diffusion Controlled Materials Phenomena in Energy Production System," To be Presented at Symposium on Advanced Materials Technology, 2006 U.S.-Korea Conference, August 10-12, 2006, Teaneck, New Jersey, USA.
176. R. Mohanty, **Y.H. Sohn**, "Phase Field Simulation of Microstructural Evolution," Presented at the 2nd Annual Florida Materials Simulators Workshop and Meeting, May 8-9, 2006, Orlando, Florida, USA.
177. B. Jayaraj, **Y.H. Sohn**, "Thermal Cycling Lifetime and Microstructural Development of Thermal Barrier Coatings with Air Plasma Sprayed NiCoCrAlY Bond Coats," Presented at the 2006 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, May 1 – May 5, 2006, San Diego, California, USA.
178. Y. Wang, **Y.H. Sohn**, Y. Fan, L. Zhang, L. An, "Oxygen Diffusion Through Aluminum-Containing Amorphous Silica," Presented at the TMS 2006: 135<sup>th</sup> Annual Meeting and Exposition, March 12-16, 2006, San Antonio, Texas, USA.
179. R. Mohanty, **Y.H. Sohn**, "Phase-Field Simulation of Microstructural Evolution in Ternary Multiphase Diffusion Couples," Presented at the TMS 2006: 135<sup>th</sup> Annual Meeting and Exposition, March 12-16, 2006, San Antonio, Texas, USA.
180. N. Garimella, M. Brady, **Y.H. Sohn**, "Interdiffusion in Ni-Cr-X (Al, Si, Ge or Pd) Alloys," Presented at the TMS 2006: 135<sup>th</sup> Annual Meeting and Exposition, March 12-16, 2006, San Antonio, Texas, USA.
181. E. Perez, T. Patterson, **Y.H. Sohn**, "Assessment of Superalloy-Dependent Lifetime of a NiCoCrAlY Coating Based on Understanding of Interdiffusion in NiAl vs. Superalloys Diffusion Couples," Presented at the TMS 2006: 135<sup>th</sup> Annual Meeting and Exposition, March 12-16, 2006, San Antonio, Texas, USA.
182. Leon, J. Liu, **Y.H. Sohn**, "Effect of Bond Coat Surface Preparation on the Thermal Cyclic Lifetime and Failure of Thermal Barrier Coatings," 2006 Florida-Georgia Louis Stokes Alliance for Minority Participation FGLSAMP Exposition, January 26-29, 2006, Albany State University, Albany, Georgia, USA.
183. N. Garimella, J.W. Byeon, W. Fischer, D. Miranda, B. Jayaraj, J. Liu, M.P. Brady, M. Radovic, T. El-Raghy, **Y.H. Sohn**, "Isothermal Oxidation Behavior of TiAlC at High Temperature in Air," Presented at the 30<sup>th</sup> Annual International Conference on Advanced Ceramics and Structures, January 22-27, 2006, Cocoa Beach, Florida, USA.

184. B. Jayaraj, D. Miranda, **Y.H. Sohn**, "Photostimulated Luminescence Spectroscopy of Various Electron Beam Physical Vapor Deposited Thermal Barrier Coatings," Presented at the 30<sup>th</sup> Annual International Conference on Advanced Ceramics and Structures, January 22-27, 2006, Cocoa Beach, Florida, USA.
185. J.W. Byeon, C.S. Kim, S.I. Kwun, C.K. Lee, K.M. Kang, **Y.H. Sohn**, "Non-Destructive Damage Assessment of Pressure Vessel Steel by Magnetic Barkhausen Emission Profile," Presented at International Conference on Advanced Materials Development and Performance, School of Engineering, July, 10-13th 2005, The University of Auckland, New Zealand.
186. **Y.H. Sohn**, E. Perez, S. Laxman, J. Liu, B. Jayaraj, J.W. Byeon, "Interdiffusion and High Temperature Coatings," Presented at First International Conference on Diffusion in Solids and Liquids, July 6-8, 2005, Aveiro, Portugal.
187. R. Mohanty, **Y.H. Sohn**, "Development of Phase-Field Model for Multiphase Interdiffusion Incorporating Strong Multicomponent Interactions," Presented at First International Conference on Diffusion in Solids and Liquids, July 6-8, 2005, Aveiro, Portugal.
188. **Y.H. Sohn**, B. Franke, B. Jayaraj, D. Miranda, S. Laxman, J. Liu, J.W. Byeon, "Evolution of Photostimulated Luminescence During Thermal Cycling of Electron Beam Physical Vapor Deposited Thermal Barrier Coatings," Presented at ASME Turbo Expo 2005 Sponsored by International Gas Turbine Institute, June 6-9, 2005, Reno-Tahoe, Nevada, USA.
189. B. Franke, **Y.H. Sohn**, X. Chen, J.R. Price, Z. Mutasim, "Monitoring Damage Evolution in Thermal Barrier Coatings with Thermal Wave Imaging," Presented at the 2004 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, May 2 – May 6, 2005, San Diego, California, USA.
190. J. Liu, J.W. Byeon, **Y.H. Sohn**, "Effects of Phase Constituents and Microstructure in Thermally Grown Oxide on The Thermal Cycling Lifetime and Failure of Thermal Barrier Coatings," Presented at the 2004 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, May 2 – May 6, 2005, San Diego, California, USA.
191. **Y.H. Sohn**, B. Jayaraj, S. Laxman, B. Franke, J.W. Byeon, "Non-Destructive and Microstructural Characterization of Thermal Barrier Coatings," Presented at the TMS 2005: 134<sup>th</sup> Annual Meeting and Exposition, February 13-17, 2005, San Francisco, California, USA.
192. N. Garimella, A. Puccio, **Y.H. Sohn**, "Assessment of Analytical Methods for the Determination of Composition-Dependent Interdiffusion Coefficients in Ternary Alloys," Presented at the TMS 2005: 134<sup>th</sup> Annual Meeting and Exposition, February 13-17, 2005, San Francisco, California, USA.
193. J. Liu, A. Puccio, N. Garimella, B. Jayaraj, S. Laxman, J.W. Byeon, **Y.H. Sohn**, "Selected Observations of Multicomponent-Multiphase Diffusion in High Temperature Coatings," Presented at the TMS 2005: 134<sup>th</sup> Annual Meeting and Exposition, February 13-17, 2005, San Francisco, California, USA.
194. J.W. Byeon, J.H. Song, S.I. Kwun, **Y.H. Sohn**, "Nondestructive Characterization of Microstructural Degradation in Creep Damaged Ni-based Superalloys by Ultrasonic Techniques," Presented at the TMS 2005: 134<sup>th</sup> Annual Meeting and Exposition, February 13-17, 2005, San Francisco, California, USA.
195. Perez, T. Patterson, **Y.H. Sohn**, "Superalloy-Dependent Stability of  $\beta$ -NiAl Phase in MCrAlY Coatings," Presented at the TMS 2005: 134<sup>th</sup> Annual Meeting and Exposition, February 13-17, 2005, San Francisco, California, USA.
196. B. Franke, **Y.H. Sohn**, X. Chen, J. Price, Z. Mutasim, "Thermal Wave Imaging Application in Thermal Barrier Coatings," Presented at the 29<sup>th</sup> Annual International Conference on Advanced Ceramics and Structures, January 23-28, 2005, Cocoa Beach, Florida, USA.
197. S. Laxman, J. Liu, **Y.H. Sohn**, "Microstructure and Phase Constituents of Thermally Grown Oxide in Thermal Barrier Coatings," Presented at the 29<sup>th</sup> Annual International Conference on Advanced Ceramics and Structures, January 23-28, 2005, Cocoa Beach, Florida, USA.
198. B. Jayaraj, S. Vishweswaraiyah, C.K. Lee, V.H. Desai, **Y.H. Sohn**, "Damage Detection of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy," Presented at the 29<sup>th</sup> Annual International Conference on Advanced Ceramics and Structures, January 23-28, 2005, Cocoa Beach, Florida, USA.

199. J.W. Byeon, S. Laxman, **Y.H. Sohn**, "Transmission Electron Microscopy of Isothermally Oxidized EB-PVD Thermal Barrier Coatings on (Ni,Pt)Al Bondcoat," Presented at The 6<sup>th</sup> International Symposium on Eco-Materials Processing and Design – ISEPD 2005, January 16-18, 2005, Jinju, Gyungnam, Korea.
200. J.W. Byeon, B. Jayaraj, **Y.H. Sohn**, "Characterization of Isothermally Oxidized ZrO<sub>2</sub>-8wt.%Y<sub>2</sub>O<sub>3</sub> Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy," Presented at The 6<sup>th</sup> International Symposium on Eco-Materials Processing and Design – ISEPD 2005, January 16-18, 2005, Jinju, Gyungnam, Korea.
201. J.W. Byeon, N. Mu, J. Liu, **Y.H. Sohn**, "Characterization of Long-Term Oxidized Nickel Aluminide Coating by Photoluminescence Spectroscopy," Presented at The 6<sup>th</sup> International Symposium on Eco-Materials Processing and Design – ISEPD 2005, January 16-18, 2005, Jinju, Gyungnam, Korea.
202. B. Franke, B. Jayaraj, S. Laxman, C. O'Toole, **Y.H. Sohn**, "Non-Destructive Evaluation of Electron Beam Physical Vapor Deposited Thermal Barrier Coatings as a Function of Furnace Thermal Cycling by Photostimulated Luminescence Spectroscopy," Presented at The 2004 International Surface Engineering Congress and Exhibition, August 2-4, Orlando, Florida, USA.
203. J. Byeon, C.S. Kim, J.H. Song, Y.H. Kim, S.I. Kwun, **Y.H. Sohn**, "Characterization of Surface Damage in Thermally Degraded FSX414 Co-Based Superalloy Using Rayleigh Ultrasonic Wave," Presented at The 2004 International Surface Engineering Congress and Exhibition, August 2-4, Orlando, Florida, USA.
204. B. Jayaraj, S. Vishweswaraiah, V. Desai, **Y.H. Sohn**, "Non-Destructive Lifetime Monitoring of Thermal Barrier Coatings Using Electrochemical Impedance Spectroscopy," Presented at The 2004 International Surface Engineering Congress and Exhibition, August 2-4, Orlando, Florida, USA.
205. S. Laxman, H. Heinrich, **Y.H. Sohn**, "Transmission Electron Microscopy of Thermal Barrier Coatings," Presented at The 2004 International Surface Engineering Congress and Exhibition, August 2-4, Orlando, Florida, USA.
206. S. Vishweswaraiah, B. Jayaraj, V.H. Desai, **Y.H. Sohn**, "Non-Destructive Evaluation of ZrO<sub>2</sub>-7wt.%Y<sub>2</sub>O<sub>3</sub> by Electrochemical Impedance Spectroscopy for Thermal Barrier Coatings Applications," Presented at The 106<sup>th</sup> American Ceramic Society Annual Meeting, Symposium on Thermal and Environmental Barrier Coatings, April 18-21, 2004, Indianapolis, Indiana, USA.
207. M. Nan, J. Liu, **Y.H. Sohn**, Y.L. Nava, "Long Term Oxidation and Phase Transformations in Aluminized CMSX-4 Superalloys," Presented at the 2003 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 26 – May 2, 2004, San Diego, California, USA.
208. A.L. Elliott, **Y.H. Sohn**, "Determination of Composition Dependent Ternary Interdiffusion Coefficients from a Single Phase Diffusion Couple," Presented at the 2004 TMS Annual Meeting and Exposition: General Abstract Session, March 14-18, 2004, Charlotte, North Carolina, USA.
209. A.L. Elliott, **Y.H. Sohn**, "Experimental Observation of the Type III Boundary in a Two-Phase Ternary Diffusion Couple," Presented at the 2004 TMS Annual Meeting and Exposition: General Abstract Session, March 14-18, 2004, Charlotte, North Carolina, USA.
210. S. Vishweswaraiah, B. Jayaraj, T. Du, V.H. Desai, **Y.H. Sohn**, "Non-Destructive Evaluation of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy," Presented at the 2004 TMS Annual Meeting and Exposition: Symposium on Electrochemical Processing and Measurement, March 14-18, 2004, Charlotte, North Carolina, USA.
211. V. Desai, **Y.H. Sohn**, "Non-Destructive and Microstructural Characterization of Thermal Barrier Coatings," Presented at the 2004 TMS Annual Meeting and Exposition, March 14-18, 2004, Charlotte, North Carolina, USA.
212. J. Liu, **Y.H. Sohn**, "Effects of Bondcoat Surface Roughness and Pre-Oxidation on the Thermal Cycling Lifetime of Thermal Barrier Coatings," Presented at the 28<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 26-31, 2004, Cocoa Beach, Florida, USA.

213. S. Laxman, **Y.H. Sohn**, K.S. Murphy, "Growth of Thermally Grown Oxide on (Ni,Pt)Al Bondcoat During Electron Beam Physical Vapor Deposition and Subsequent Short Term Oxidation," Presented at the 28<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 26-31, 2004, Cocoa Beach, Florida, USA.
214. J. Liu, E.H. Jordan, M. Gell, **Y.H. Sohn**, "Effects of Bondcoat Surface Preparation on the Thermal Cycling Lifetime of Thermal Barrier Coatings," Presented at the 2<sup>nd</sup> International Surface Engineering Congress and Exposition, September 15-17, 2003, Indianapolis, Indiana, USA.
215. S. Laxman, S.K. Jha, B.W. Kempshall, J. Liu, **Y.H. Sohn**, "A Microstructural Observation of Nearly-Failed Thermal Barrier Coating: A Study by Photo-Stimulated Luminescence Spectroscopy and Transmission Electron Microscopy," Presented at Gordon Research Conference on High Temperature Corrosion, July 20-25, 2003, Colby-Sawyer College, New London, New Hampshire, USA.
216. B. Jayaraj, S. Vishweswaraiah, V.H. Desai, C.K. Lee, **Y.H. Sohn**, "Non-Destructive Evaluation of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy," Presented at Gordon Research Conference on High Temperature Corrosion, July 20-25, 2003, Colby-Sawyer College, New London, New Hampshire, USA.
217. Y.S. Kim, G.L. Hofman, S.L. Hayes, **Y.H. Sohn**, "Analysis of Thermomigration in Irradiated U-Pu-Zr Fuel," Presented at the Plutonium Futures - The Science: Third Topical Conference on Plutonium and Actinides, July 6 - 10, 2003, Albuquerque, New Mexico, USA.
218. V. Krishnan, J.S. Kapat, **Y.H. Sohn**, V.H. Desai, "Effect of Film Cooling on Low Temperature Hot Corrosion in a Coal Fired Gas Turbine," Paper No. GT2003-38593, Presented at the 2003 ASME-IGTI Turbo Exposition and International Joint Power Generation Conference, June 16-19, 2003, Atlanta, Georgia, USA.
219. L. An, L. Bharadwaj, Y. Wang, A. Dhamne, B. Fookes, **Y.H. Sohn**, V.H. Desai, J. Kapat, L. Chow, "Synthesis, Oxidation and Corrosion of Polymer-Derived SiAlCN Ceramics," Presented at the 2003 ASME-IGTI Turbo Exposition and International Joint Power Generation Conference, June 16-19, 2003, Atlanta, Georgia, USA.
220. S. Vishweswaraiah, B. Jayaraj, T. Du, **Y.H. Sohn** and V. H. Desai, "Non-Destructive Evaluation of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy," Presented at the 2003 International Thermal Spray Conference and Exposition, ITSC 2003, Symposium on Advances in Thermal and Environmental Barrier Coatings, May 5-8, 2003, Orlando, Florida, USA.
221. B. Jayaraj, S. Vishweswaraiah, V.H. Desai and **Y.H. Sohn**, "Electrochemical Impedance Spectroscopy of Thermal Barrier Coatings as a Function of Isothermal and Cyclic Thermal Exposure," Presented at the 2003 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 26 - May 2, 2003, San Diego, California, USA.
222. B.W. Kempshall, **Y.H. Sohn**, R. Subramanian and A.J. Burns, "Microstructure of As-Coated Thermal Barrier Coatings with Varying Lifetimes," Presented at the 2003 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 26 - May 2, 2003, San Diego, California, USA.
223. S. Laxman, B. Franke, L.A. Giannuzzi, **Y.H. Sohn**, K.S. Murphy, "Phase Transformation of Thermally Grown Oxide on (Ni,Pt)Al Bond Coat During Electron Beam Physical Vapor Deposition and Subsequent Oxidation," Presented at the 2003 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 26 - May 2, 2003, San Diego, California, USA.
224. B. Jayaraj, S. Vishweswaraiah, T. Du, V. H. Desai, **Y.H. Sohn**, "Non-Destructive Evaluation of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy," Presented at the 2003 Annual Joint Symposium of Florida Chapter of American Vacuum Society and Florida Society for Microscopy, March 17-18, 2003, Orlando, Florida, USA.
225. N. Mu, J. Liu, S.K. Jha, **Y.H. Sohn**, "Al-O-N Based Duplex Coating System for Improved Oxidation Resistance for Superalloys and NiCrAlY Coatings", Presented at the 2003 Annual Joint Symposium of Florida Chapter of American Vacuum Society and Florida Society for Microscopy, March 17-18, 2003, Orlando, Florida, USA.
226. S. Laxman, B. Franke, B. Kempshall, L.A. Giannuzzi, **Y.H. Sohn**, "Effect of Bondcoat Surface on the Development of Alumina Polymorphs in a Thermally Grown Oxide for Thermal Barrier Coatings,"

Presented at the 2003 Annual Joint Symposium of Florida Chapter of American Vacuum Society and Florida Society for Microscopy, March 17-18, 2003, Orlando, Florida, USA.

227. N. Mu, **Y.H. Sohn** and I.L. Nava, "Long-Term Oxidation Behavior of Aluminized CMSX-4 Superalloy," Presented at The 132<sup>nd</sup> TMS Annual Meeting & Exhibition, Surface Engineering in Materials Science II, March 2-6, 2003, San Diego, CA.
228. B. Jayaraj, T. Du, S. Vishweswaraiah, **Y.H. Sohn** and V.H. Desai, "Microstructure and Chemistry in Thermal Barrier Coatings and Growth of Thermally Grown Oxide on NiAl: Non-Destructive Evaluation by Electrochemical Impedance Technique," Presented at the 27<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 26-31, 2003, Cocoa Beach, Florida, USA.
229. B.W. Kempshall, L.A. Giannuzzi and **Y.H. Sohn**, "Transmission Electron Microscopy of As-Coated and Thermally-Cycled Thermal Barrier Coatings with Specimen Preparation by In-situ Lift-Out Focused Ion Beam Technique," Presented at the 27<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 26-31, 2003, Cocoa Beach, Florida, USA.
230. **Y.H. Sohn**, S.K. Jha and N. Mu, "Non-Destructive Evaluation of Thermal Barrier Coatings by Photostimulated Luminescence Spectroscopy", Presented at International Conference on Advances in Life Assessment and Optimization of Fossil Fuel Power Plants, March 11-13, 2002, Sheraton World Resort, Orlando, Florida, USA.
231. **Y.H. Sohn**, B. Jararaj, J. Zhang and V.H. Desai, "Non-Destructive Evaluation of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy", Presented at the 26<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 13-18, 2002, Cocoa Beach, Florida, USA.
232. E.Y. Lee, **Y.H. Sohn**, S.K. Jha and R.D. Sisson, Jr., "Phase Transformation of Plasma Sprayed ZrO<sub>2</sub>-CeO<sub>2</sub> Thermal Barrier Coatings", Presented at the 26<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 13-18, 2002, Cocoa Beach, Florida, USA.
233. S.K. Jha, **Y.H. Sohn**, S. Sastri, N. Gunda and J.A. Hanyes, "Alumina Coating Development for Oxidation Protection of Superalloy", Presented at the 26<sup>th</sup> Annual International Conference on Advanced Ceramics and Composites, January 13-18, 2002, Cocoa Beach, Florida, USA.
234. J.H. Kim, E.H. Jordan, M. Gell, **Y.H. Sohn**, "Failure Mechanism of 1 Hour and 24 Hour Thermally Cycled TBCs", Presented at the 2001 ASME International Mechanical Engineering Congress and Exposition: Symposium on Thermal Barrier Coatings, November 11-16, 2001, New York, New York, USA.
235. L.D. Xie, **Y.H. Sohn**, E.H. Jordan, M. Gell, "Photo-Stimulated Luminescence Piezo-Spectroscopy Measurement on a EB-PVD 7YSZ/(Ni,Pt)Al/CMSX-4 TBC System", Presented at 2001 ASME International Mechanical Engineering Congress and Exposition: Symposium on Thermal Barrier Coatings, November 11-16, 2001, New York, New York, USA.
236. E.H. Jordan, **Y.H. Sohn**, W. Xie, M. Gell, L. Xie, F. Tu, K.R. Pattipati, P. Willett, "Residual Stress Measurement of Thermal Barrier Coatings Using Laser Fluorescence Technique and Their Life Prediction", Presented at AUTOTESTCON-2001, Valley Forge, Pennsylvania, August 20-23, 2001.
237. **Y.H. Sohn**, K. Vaidyanathan, M. Ronski, E. Jordan and M. Gell, "Evolution of Photostimulated Luminescence from Thermally Grown Oxide in EBPVD/MCrAlY/IN738 Thermal Barrier Coatings during Thermal Cyclic Oxidation at 1121°C", Presented at the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 30 – May 4, 2001, San Diego, California, USA.
238. **Y.H. Sohn**, J.H. Kim, E. Jordan and M. Gell, "Microstructural Development and Failure Characteristics of EBPVD/MCrAlY/IN738 Thermal Barrier Coatings during Thermal Cyclic Oxidation at 1121°C", Presented at the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 30 – May 4, 2001, San Diego, California, USA.
239. **Y. H. Sohn**, R. R. Biederman, and R. D. Sisson Jr., E. Y. Lee, B. A. Nagaraj, "Microstructural Characterization of Thermal Barrier Coatings on High Pressure Turbine Blades", Presented at the 2001 International Conference on Metallurgical Coatings and Thin Films - ICMCTF, April 30 – May 4, 2001, San Diego, California, USA.

240. H. Luo, D. Goberman, **Y.H. Sohn** and L.L. Shaw, "Microstructure and Properties of Thermally Sprayed Nanostructured Al<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub> Coatings", Presented at the 103<sup>rd</sup> American Ceramic Society Meeting, Symposium on Ceramic Coatings for Thermal, Environmental and Mechanical Applications, Indianapolis, Indiana, April 22-25, 2001.
241. D. Goberman, **Y.H. Sohn**, L.L. Shaw, E.H. Jordan, M. Gell, M. Wang, S. Jiang, Y. Wang, T.D. Xiao and P.R. Strutt, "Thermal Spray of Al<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub> Coatings with Nanopowder Feeds", Presented at the 103<sup>rd</sup> American Ceramic Society Meeting, Symposium on Ceramic Coatings for Thermal, Environmental and Mechanical Applications, Indianapolis, Indiana, April 22-25, 2001.
242. **Y. H. Sohn** and M. A. Dayananda, "A New Analysis for the Determination of Ternary Interdiffusion Coefficients for Ni-Cr-Al and Fe-Ni-Al Alloys", Presented at TMS Annual Meeting: Symposium on High Temperature Coatings-IV, February 11-15, 2001, New Orleans, Louisiana, U.S.A.
243. D. Goberman, **Y. H. Sohn** and L. Shaw, "Phase Constituent and Microstructural Analysis of Plasma Sprayed Al<sub>2</sub>O<sub>3</sub>-13wt.%TiO<sub>2</sub> Coatings via Reconstituted Nanostructured Powders", Presented at the 2000 ASM/TMS Materials Week - TMS Fall Meeting, October 9-12, 2000, Saint Louis, Missouri, U.S.A.
244. **Y.H. Sohn**, K. Vaidyanathan, K. Schlichting, E. Jordan and M. Gell, "Evolution of Residual Stress in Thermally Grown Oxide for EBPVD / MCrAlY / IN 738 Thermal Barrier Coatings", Presented at the 2000 ASM/TMS Materials Week – Energy and Utilities Program Gas Turbine: Performance Issues: Coatings, October 9-12, 2000, Saint Louis, Missouri, U.S.A.
245. K. Vaidyanathan, **Y.H. Sohn**, E. Jordan and M. Gell, "Improvement in the Spallation Life of (Ni,Pt)Al/EB-PVD Thermal Barrier Coatings", Presented at the 102<sup>nd</sup> Annual Meeting and Exposition of The American Ceramic Society, April 30 – May 3, 2000, Saint Louis, Missouri, U.S.A.
246. **Y. H. Sohn** and M. A. Dayananda, "Selected Observations and Analysis for Diffusion in the Fe-Ni-Al System at 1000°C", Presented at the 1999 ASM/TMS Materials Week - TMS: General Abstract Session, October 31 – November 4, 1999, Cincinnati, Ohio, U.S.A.
247. M.A. Dayananda and **Y.H. Sohn**, "An Analysis for Interdiffusion Coefficients and Thermotransport Coefficients in Isothermal and Nonisothermal Ternary Diffusion Couples", Presented at the 2<sup>nd</sup> International Conference on Diffusion and Reactions, from Basis to Applications, September 14-18, 1999, Krakow, Poland.
248. **Y.H. Sohn**, "Engineering: A Perspective from Research and Development", Presented at The Career Forum '99, Sponsored by the Korean American Network, YWCA-Flushing, the Korean-American Youth Foundation and the NYC Department of Youth and Community Development, May 15, 1999, Flushing, New York, U. S. A.
249. M. Gell, E. Jordan, K. Vaidyanathan, K. McCarron, **Y.H. Sohn** and D.R. Clarke, "Relationships Among Bond Strength, Bond Stress and Spallation Mechanisms of Thermal Barrier Coatings", Invited Presentation at the 1999 International Conference on Metallurgical Coatings and Thin Films, April, 12-16, 1999, San Diego, California, USA.
250. **Y.H. Sohn** and M.A. Dayananda, "Diffusion Structures and Diffusion Paths in the Fe-Ni-Al System", Presented at the 1998 Engineering Dean's Club Luncheon, October 30, 1998, Purdue University, Indiana, U.S.A.
251. M.A. Dayananda and **Y.H. Sohn**, "A New Approach for the Determination of Interdiffusion Coefficients in Ternary Systems", Presented at the 1998 ASM/TMS Materials Week - TMS : General Abstract Session, September 14-18, 1998, Rosemont, Illinois, U.S.A.
252. **Y.H. Sohn** and M.A. Dayananda, "Diffusion Structures and Diffusion Paths in the Fe-Ni-Al System", Presented at the 1998 ASM/TMS Materials Week - TMS : Evolving Paradigms in Microstructure Evolution: A Symposium Dedicated to Dr. John W. Cahn, September 14-18, 1998, Rosemont, Illinois, U.S.A..
253. **Y. H. Sohn** and M. A. Dayananda, "Characterization of Concentration Profiles with Average Effective Interdiffusion Coefficients and Characteristic Depths" Presented at the 1997 ASM/TMS Materials Week - Phase Transformation: TMS General Abstract Session, September 14-18, 1997, Indianapolis, Indiana, U.S.A.



254. M. A. Dayananda, **Y. H. Sohn**, and G. L. Hofman, "An Analysis of Redistribution of the Elements in U-Pu-Zr Alloys Under a Temperature Gradient", Presented at the 1996 ASM/TMS Materials Week - Symposium on Diffusion and Reactions in Thermal, Electrical and Stress Gradient II-Thermotransport, October 7-10, 1996, Cincinnati, Ohio, U.S.A.
255. **Y. H. Sohn** and M. A. Dayananda, "Analysis and Generation of Concentration Profiles for Selected Ternary Diffusion Couples", Presented at 1996 Gordon Research Conference Poster Session for Physical Metallurgy, July 28-August 2, 1996, Plymouth, New Hampshire, U.S.A.
256. R. D. Sisson, Jr., **Y. H. Sohn**, K. C. Cho, E. Y. Lee, G. Wechsler and V. K. Champagne, "The Role of Diffusion, Oxidation and Interfacial Reactions in the Failure of Thermal Barrier Coatings", Presented at the 1994 TMS Fall Meeting - Symposium on High Temperature Coatings I, October 2-6, 1994, Rosemont, Illinois, U.S.A.
257. **Y. H. Sohn**, E. Y. Lee, R. R. Biederman and R. D. Sisson, Jr., "Life Prediction for Thermal Barrier Coatings During Thermal Fatigue", Presented at the 11th International Invitational Symposium on the Unification of Analytical, Computational, and Experimental Solution Methodologies in Micromechanics and Microsystems, August, 18-20, 1993, Danvers, Massachusetts, U.S.A.
258. **Y. H. Sohn**, R. R. Biederman and R. D. Sisson, Jr., "Isothermal Oxidation of Physical Vapor Deposited Partially Stabilized Zirconia Thermal Barrier Coatings", Presented at the 1993 Advanced Aerospace/Processes Conference and Exposition, June 7-10, 1993, Anaheim, California, U.S.A.
259. **Y. H. Sohn**, R. R. Biederman, M. R. Pascucci and R. D. Sisson, Jr., "Physical Vapor Deposition of Partially Stabilized Zirconia for Thermal Barrier Coatings", Presented at the 95th American Ceramic Society Annual Meeting and Exposition, Ceramographic Exhibition, April 18-22, 1993, Cincinnati, Ohio, U.S.A.
260. E.Y. Lee, **Y. H. Sohn** and R. D. Sisson, Jr., "Life Prediction of Thermal Barrier Coatings", Presented at the 3rd International Symposium on High Temperature Corrosion and Protection of Materials, May 25-29, 1992, Les Embiez, France.
261. **Y. H. Sohn**, E. Y. Lee and R. D. Sisson, Jr., "Life Prediction and Life Extension of Thermal Barrier Coatings for Gas Turbine Engines", Presented at the 1992 Coatings for Advanced Heat Engine Workshop, Sponsored by Office of Transportation Technology, Assistant Secretary for Conservation and Renewable Energy, U.S. Department of Energy, August, 3-6, 1992, Monterey, California, U.S.A.
262. E. Y. Lee, R. R. Biederman, **Y. H. Sohn** and R. D. Sisson, Jr., "Characterization of Partially Stabilized Zirconia Thermal Barrier Coatings", Presented at the Irish Materials Forum Conference-IMF7, September 4-6, 1991, University of Limerick, Ireland.
263. **Y. H. Sohn**, "Vibratory Casting of Refractories", Presented at the First Korean-American Student Academic Symposium on Science and Engineering, April 20, 1991, Boston, Massachusetts, U.S.A.

**OTHER SIGNIFICANT SCHOLARSTIC/TECHNICAL REPORTS AND PRESENTATIONS**

1. **Y.H. Sohn**, "Microstructurally Designed Hierarchal Aluminum Metal Matrix Composites," KSEA Letters – Journal of the Korean-American Scientists and Engineers Association, 40 (2012) pp. 10-11.
2. **Y.H. Sohn**, "Multicomponent-Multiphase Interdiffusion, and High Temperature Materials and Coatings," Faculty Research Showcase from Award Recipients of Distinguished Research, 2006 UCF Research Week, March 28, 2006.
3. J. McBrayer, **Y.H. Sohn**, E. Petersen and A. Gordon, "Objectives - Outcomes - Performance Criteria - Assessment - Evaluation Gibberish, Necessary Evils, or Common Sense?" *Faculty Focus*, University of Central Florida, 2005.
4. **Y.H. Sohn**, "Feature Article: Central Florida Chapter - Back on Track! A chapter rejuvenates in Central Florida," *ASM Chapter NEXUS*, Vol. 4, No. 4, May 2004.
5. **Y.H. Sohn**, "Increasing Interactive Learning in the MSE Curriculum," *Faculty Focus*, University of Central Florida, Vol. 2, No. 1, (2003) pp. 52 – 55.
6. **Y. H. Sohn**, "Analysis of Interdiffusion Fluxes under Multiple Gradient", Ph.D. Dissertation, Purdue University, West Lafayette, Indiana, U.S.A., November, 1998.
7. **Y. H. Sohn** and M. A. Dayananda, "Cause of Corrosion on a Copper Connector", Technical Assistant Program Report prepared for PDS ERAM, Merrillville, Indiana, U.S.A., March 9, 1998.
8. **Y. H. Sohn** and M. A. Dayananda, "Characterization of Aluminum Alloys for Bicycle Rims", Technical Assistant Program Report prepared for Sun Rims USA, Warsaw, Indiana, U.S.A., June 11, 1998.
9. **Y. H. Sohn** and M. A. Dayananda, "Failure Analysis and Characterization of Welded Milling Cutters", Technical Assistant Program Report prepared for Whitney Tool Company, Inc, Bedford, Indiana, U.S.A., June 30, 1998.
10. **Y. H. Sohn**, "Ph. D. Preliminary Examination: Effects of Structural Characteristics and Solute Segregation on Grain Boundary Diffusion in Metals", Submitted to and Approved by Faculty of School of Materials Engineering, Purdue University, West Lafayette, Indiana, U.S.A., October, 1996.
11. **Y.H. Sohn**, "Characterization and Life Prediction of Electron-Beam Physical Vapor Deposited Thermal Barrier Coatings", M.S. Thesis, Worcester Polytechnic Institute, Worcester, Massachusetts, U.S.A., May 1993.
12. **Y.H. Sohn**, "Vibratory Cast Ceramics", Major Qualifying Project, Worcester Polytechnic Institute, Worcester, Massachusetts, U.S.A., May 1993.
13. **Y.H. Sohn** and S.J. Rhee, "Perspective in Research, Development and Use of Integrated Services Digital Network in the Republic of Korea", Interactive Qualifying Project, Worcester Polytechnic Institute, Worcester, Massachusetts, U.S.A., May 1992.

**CONFERENCE/SYMPOSIUM ORGANIZATION, SESSION CHAIRS AND PANELS (To Serve in Red)**

- **Member of International Advisory Board** for Symposium Ceramics Thin Films and Coatings for Protective, Tribological and Multifunctional Applications, 13<sup>th</sup> *International Ceramics Congress, CIMTEC-2014*, June 2014, Tuscany, Italy.
- **Member of Scientific Committee and Session Chair**, 9th International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties*, DSL-2013, July 24 - 28, 2013, Madrid, Spain.
- **Panel Member**, “NSF CAREER Faculty Panel Discussion,” Office of Research and Commercialization, University of Central Florida, March, 19, 2013.
- **Symposium Co-Organizer and Session Chair**, 2013 TMS Annual Meeting & Exhibition, Symposium on Phase Transformation and Microstructural Evolution, March 3-7, 2013, San Antonio, Texas, U.S.A.
- **Session Chair**, 2013 TMS Annual Meeting & Exhibition, 2013 Symposium on Functional Nanomaterials – Synthesis, Properties and Applications, March 3-7, 2013, San Antonio, Texas, U.S.A.
- **Symposium Co-Organizer and Session Chair**, Materials Science and Technology 2012 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK VII, October 7-11, 2012, Pittsburgh, Pennsylvania, U.S.A.
- **Academic Panel Speaker**, 2012 US-Korea Conference on Science, Technology and Entrepreneurship: Symposium on Career and Leadership, August 8-12, 2012, Los Angeles, California, USA.
- **Poster Session Chair and Judge**, 2012 US-Korea Conference on Science, Technology and Entrepreneurship: Symposium on Mechanical, Aerospace and Ocean Systems Engineering, August 8-12, 2012, Los Angeles, California, USA.
- **Panel Speaker for Academia**, Korean Student Technical and Leadership Conference: Career Development Workshop, March 16-18, 2012, Chicago, Illinois, USA.
- **Member of Scientific Committee**, 8th International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties*, DSL-2012, June 25 - 29, 2012, Istanbul, Turkey.
- **Session Chair**, 2012 TMS Annual Meeting & Exhibition: Symposium on Magnesium Technology 2012: Casting and Solidification, March 11-15, 2012, Orlando, Florida, U.S.A.
- **Symposium Co-Organizer and Session Chair**, The 36th Annual International Conference on Advanced Ceramics and Composites: Thermal Barrier Coatings, January 23-28, 2012, Daytona Beach, Florida, U.S.A.
- **Symposium Co-Organizer and Session Chair**, Materials Science and Technology 2011 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK VI, October 16-20, 2011, Columbus, Ohio, U.S.A.
- **Member of International Scientific Committee**, 8th International Conference on Diffusion in Materials (DIMAT 2011), July 3-8, 2011, Dijon, France.
- **Member of Scientific Committee and Session Chair**, 7th International Conference on Diffusion in Solids and Liquids: Symposium on Chemical Diffusion and Reaction in Engineering Alloys, DSL-2011, June 26 - 30, 2011, Algarve, Portugal.
- **Session Chair**, 2011 TMS Annual Meeting & Exhibition: Hume-Rothery Symposium Thermodynamics and Diffusion Coupling in Alloys - Application Driven Science in honor of Prof. John Agren, February 27 - March 3, 2011, San Diego, California, USA.
- **Symposium Co-Organizer and Session Chair**, The 35th Annual International Conference on Advanced Ceramics and Composites: Thermal Barrier Coatings, January 23-28, 2011, Daytona Beach, Florida, U.S.A.

- **Symposium Co-Organizer and Session Chair**, Materials Science and Technology 2010 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK V, October 17-22, 2010, Houston, Texas, U.S.A.
- **Member of Scientific Committee and Session Chair**, 6th International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties*, DSL-2010, July 3-6, 2010, Paris, France.
- **Member of Advisory Board** for Symposium on Advanced Fossil Fuel Energy Technologies: the Materials Demand, 5<sup>th</sup> Forum on New Materials, June 13-18, 2010, Tuscany, Italy
- **Symposium Chair**, Symposium on Coatings for Use at High Temperature, 2010 International Conference on Metallurgical Coatings and Thin Films ICMCTF-2010, April 25 – 30, 2010, San Diego, California, USA.
- **Symposium Co-Organizer and Session Chair**, The 34th Annual International Conference on Advanced Ceramics and Composites: Thermal Barrier Coatings, January 24-29, 2010, Daytona Beach, Florida, U.S.A.
- **Symposium Co-Organizer and Session Chair**, Materials Science and Technology 2009 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK IV, October 25-29, 2009, Pittsburgh, Pennsylvania, U.S.A.
- **Member of Scientific Committee and Session Chair**, 5th International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties*, DSL-2009, June 24-26, 2009, Rome, Italy.
- **Session Chair**, 2009 International Thermal Spray Conference and Exposition, May 4-7, 2009, Las Vegas, Nevada, U.S.A.
- **Symposium Co-Organizer and Session Chair**, 2007 TMS Annual Meeting and Exposition: Diffusion in Materials for Energy Technologies, February 15 – 19, 2009, San Francisco, California, USA, U.S.A.
- **Symposium Co-Organizer and Session Chair**, The 33rd Annual International Conference on Advanced Ceramics and Composites: Thermal Barrier Coatings, January 27 – February 1, 2009, Daytona Beach, Florida, U.S.A.
- **Session Chair**, 7<sup>th</sup> International Conference on Diffusion in Materials (DIMAT 2008), October 28-31, 2008, Lanzarote - Canary Island, Spain.
- **Symposium Lead-Organizer and Session Chair**, Materials Science and Technology 2008 Conference: Symposium on Phase Stability, Diffusion Kinetics and Their Applications – PSDK III, October 5-9, 2008, Pittsburgh, Pennsylvania, U.S.A.
- **Member of Scientific Committee**, 4th International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties*, DSL-2008, July 9-11, 2008, Barcelona, Spain.
- **Symposium Co-Organizer and Session Chair**, The 32nd Annual International Conference on Advanced Ceramics and Composites: Thermal Barrier Coatings, January 27 – February 1, 2008, Daytona Beach, Florida, U.S.A.
- **Symposium Co-Organizer**, Materials Science and Technology 2007 Conference: High Temperature Materials Systems - Fatigue Mechanisms and Prognosis, September 17-20, 2007, Detroit, Michigan, U.S.A.
- **Symposium Co-Organizer and Session Chair**, Materials Science and Technology 2007 Conference: Symposium on Phase Stability, Diffusion, and their Applications, September 17-20, 2007, Detroit, Michigan, U.S.A.
- **Member of Scientific Committee, Special Topic Symposium Organizer and Session Chair**, 3rd International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties – Special Topic Symposium on Diffusion in Energy Production Systems*, DSL-2007, July 26-28, 2007, Algarve, Portugal.
- **Symposium Lead-Organizer and Session Chair**, 2007 TMS Annual Meeting and Exposition: Diffusion in Advanced Materials and Processing, February 25 - March 1, 2007, Orlando, Florida, U.S.A.

- **Symposium Co-Organizer**, 2007 TMS Annual Meeting and Exhibition: Materials in Clean Power Systems 2: Fuels Cells, Solar and Hydrogen-Based Technologies, February 25 - March 1, 2007, Orlando, Florida, U.S.A.
- **Symposium Co-Organizer and Session Chair**, The 31st Annual International Conference on Advanced Ceramics and Structures: Thermal Barrier Coatings, January, 2007, Daytona Beach, Florida, U.S.A.
- **Session Chair**, 2006 Materials Science and Technology Conference and Exhibition: Phase Stability, Diffusion and Their Applications, October 15-19, 2006, Cincinnati, Ohio, U.S.A.
- **Session Chair**, 2nd International Conference on Diffusion in Solids and Liquids: *Mass Transfer, Heat Transfer, Microstructure & Properties*, DSL-2006, July 26-28, 2006, Aveiro, Portugal.
- **Symposium Lead-Organizer and Session Chair**, 2006 TMS Annual Meeting and Exposition: Multicomponent-Multiphase Diffusion Symposium in Honor of Mysore A. Dayananda, March 12-16, 2006, San Antonio, Texas, U.S.A.
- **Symposium Co-Organizer and Session Chair**, The 30th Annual International Conference on Advanced Ceramics and Structures: Thermal Barrier Coatings, January, 2006, Cocoa Beach, Florida, U.S.A.
- **Symposium Co-Organizer and Session Chair**, Symposium on Modeling Heat Treat Processes, Materials Science and Technology (MS&T 2005), September 25-28, 2005, Pittsburgh, PA, U.S.A.
- **Program Organizer**, 2005 ASM Central Florida Chapter Student Poster Competition, April 13, 2005, ASM Central Florida Chapter, Orlando, FL, U.S.A.
- **Symposium Co-Organizer and Session Chair**, 2005 TMS Annual Meeting and Exposition: Symposium on Multicomponent Multiphase Diffusion in Honor of John E. Morral, February 13-17, 2005, San Francisco, California, USA.
- **Symposium Co-Organizer and Session Chair**, The 29th Annual International Conference on Advanced Ceramics and Structures: Thermal Barrier Coatings, January 23-28, 2005, Cocoa Beach, Florida, U.S.A.
- **Program Organizer**, 2004 ASM Central Florida Chapter Student Poster Competition, April 13, 2004, ASM Central Florida Chapter, Orlando, FL, U.S.A.
- **Session Chair**, The 28th Annual International Conference on Advanced Ceramics and Structures: TBC: Coating Characterizations, The American Ceramic Society, January 25-30, 2004, Cocoa Beach, Florida, U.S.A.
- **Session Chair**, 2003 International Thermal Spray Conference and Exposition: Symposium on Advances in Thermal and Environmental Barrier Coatings, May 5-8, 2003, Orlando, Florida, U.S.A.
- **Session Chair**, 2003 TMS Annual Meeting and Exposition: Symposium on Surface Engineering in Materials Science II, March 2-6, 2003, San Diego, California, U.S.A.
- **Session Chair**, The 27th Annual International Conference on Advanced Ceramics and Structures: TBC/EBC: Novel Coatings Development-II, The American Ceramic Society, January 26-31, 2003, Cocoa Beach, Florida, U.S.A.
- **Host Committee Member**, Nano 2002 Sixth International Conference on Nanostructured Materials, June 16-21, 2002, Orlando, Florida, U.S.A.
- **Session Chair**, The 26th Annual International Conference on Advanced Ceramics and Structures: TBC/EBC: Novel Coatings Development-II, The American Ceramic Society, January 13-18, 2002, Cocoa Beach, Florida, U.S.A.
- **Session Chair**, TMS Annual Meeting: Symposium on High Temperature Coatings-IV, February 11-15, 2001, New Orleans, Louisiana, U.S.A.

## RECENT EXTERNAL COLLABORATION

### National Laboratory and Federal Agencies

- C.E. Campbell, W. Boettinger, National Institute of Standard and Technology, Gaithersburg, MD
- M.P. Brady, B. Pint, N. Kulkarni, B. Warmack, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN
- D. Keiser, Jr., M. Okunieski, H. Sencer, R. Kennedy, Idaho National Laboratory, Idaho Fall, ID
- G.L. Hofman, Y. Kim, Argonne National Laboratory, Argonne, IL
- E. Chin, K. Cho, E. Klier, Army Research Laboratory, Aberdeen Proving Ground, MD

### Universities and Other Academic Institutions

- K.T. Ramesh, Mechanical Engineering, Johns Hopkins University, Baltimore, MD
- M.A. Dayananda, School of Materials Engineering, Purdue University, West Lafayette, IN
- J.E. Morral, Z.C. Zhao, Y. Wang, Materials Science and Engineering, The Ohio State University, Columbus, OH
- M. Gell, Metallurgy and Materials Engineering, University of Connecticut, Storrs, CT
- E.H. Jordan, Mechanical Engineering, University of Connecticut, Storrs, CT
- A.M. Karlsson, Mechanical Engineering, University of Delaware, DE
- R.D. Sisson, Jr., Mechanical Engineering Department, Worcester Polytechnic Institute, Worcester, MA
- W.F. Gale, Auburn University, Auburn, AL
- Z.K. Liu, Penn State University, College Park, PA.
- A. Kumar, University of South Florida, Tampa, FL.
- B. Roldan, H. Heinrich, P. Schelling, Department of Physics, University of Central Florida, Orlando, FL

### Industry

- D.A. Helmick, General Electric Power Systems, Greenville, SC
- B.A. Nagaraj, General Electric Aircraft Engines, Cincinnati, OH
- Z.C. Zhao, General Electric Global Research Center, Schenectady, NY
- X. Chen, J. Kimmel, I. Nava, X. Chen, J. Price, Z. Mutasim, Solar Turbines Incorporated, San Diego, CA
- S. Bose, M. Maloney, K. Schlichting, Pratt & Whitney, Hartford, CT
- V. Philip, J. Burns, D.B. Allen, Siemens-Westinghouse Power Corporation, Orlando, FL
- K.S. Murphy, Howmet International, Whitehall, MI
- J. Brostmeyer, D. Davies, Florida Turbine Technologies, Inc., Jupiter, FL
- S. Sastri, Surmet Corporation, Burlington, MA
- L.P. Domingues, Trans-Tech, Inc., Adamstown, MD
- A. Feuerstein, A. Bolcavage, D. Wang, Praxair Surface Technologies, Inc., Indianapolis, IN.
- V. Kallianpur, Y. Tomita, Mitsubishi Power Systems, Orlando, FL

### International

- I. Belova, G.E. Murch, The University of Newcastle, Australia
- H. Murakami, M. Ode, K. Gawagishi, National Institute of Materials Science, Tsukuba, Japan
- S.H. Rhee, Department of Mechanical Engineering, Hanyang University, Seoul, Korea
- C.K. Lee, Department of Mechanical Engineering, Seoul National University of Technology, Seoul, Korea
- E.Y. Lee, K.B. Park, Department of Materials Engineering, Andong National University, Andong, Korea

## RESEARCH SUPERVISION (Current Students in Red)

### Doctor of Philosophy in Materials Science and Engineering

1. YoungJoo Park, "Interdiffusion and Reaction in Selected Uranium Alloys," June 2013, in Progress from August, 2013..
2. Clara Hofmeister, "Effects of Dispersoids on Grain Growth and Strength of Aluminum Metal Matrix Composites," June 2013, in Progress from August, 2013.
3. Catherine Kammerer, "Intrinsic and Interdiffusion in Multicomponent Diffusion," in Progress from May, 2013.
4. Mian Fu, "Multicomponent Diffusion and Phase Transformations," in Progress from August, 2011.
5. Le Zhou, Ph.D. Qualified, "Diffusion and Phase Transformations in Polycrystalline Magnetocaloric Metallic Alloys," in Progress from January, 2009.
6. Biao Yuan, Co-Advisor, "Direct Measurement of Thicknesses, Volumes or Compositions of Nanomaterials by Quantitative Atomic Number Contrast in High-Angle Annular Dark-Field Scanning Transmission Electron Microscopy," July, 2012.
7. Ke Huang, "Diffusion and Reaction in Selected Uranium Alloy Systems," July, 2012, Employed at Siemens Power Generation, Orlando, FL, U.S.A.
8. Balaji Jayaraj, "Correlating Microstructural Development and Failure Mechanisms to Photostimulated Luminescence Spectroscopy and Electrochemical Impedance Spectroscopy in Thermal Barrier Coatings," February, 2011, Employed at Mitsubishi Power Systems, Orlando, FL, USA.
9. Emmanuel Perez, "Interdiffusion Behavior of U-Mo Alloys in Contact with Al and Al-Si alloys," February, 2011, Employed at Idaho National Laboratory, Idaho Falls, ID, U.S.A.
10. Prabhakar Mohan, "Environmental Degradation of Air Plasma Sprayed Yttria-Stabilized Zirconia Coatings," February, 2010, Employed at Solar Turbines Incorporated, San Diego, CA, U.S.A.
11. Rashmi Mohanty, "Phase Field Simulation of Multicomponent-Multiphase Interdiffusion: Concentration Profiles and Microstructure Development," December, 2008, Employed at Arcelor-Mittal Company, East Chicago, IL, U.S.A.
12. Garimella Narayana, "Multicomponent Diffusion and Oxidation in Austenitic Ni-Cr and Fe-Ni-Cr Alloys with Al, Si, Ge, Pd Additions," November, 2008, Materials Engineer, Employed at University of Maryland, MD, U.S.A.
13. Jing Liu, "Mechanisms of Lifetime Improvement in Thermal Barrier Coatings with Hf and/or Y Modification of CMSX-4 Superalloy," October, 2007, Employed at Sulzer-Metco Corporation, Westbury, NY, U.S.A.

### Master of Science in Materials Science and Engineering

1. Nicholas Eriksson, "Effects of Irradiation on Microstructure and Diffusion in Metallic Alloys," in Progress from August, 2013.
2. Omar Ahmed, "Hot Corrosion of Selected Alloys in Eutectic Salts," Expected, December 2013.
3. Kevin Coffy, "Microstructural Development and Anisotropic Behavior of Additive Manufactured Materials and Components," Expected December, 2013.
4. Chad Heinrich, "Microstructural Characterization of a Conventionally Cast and Directionally Solidified Ni-base Superalloy Following Hot Isostatic Pressing and Heat Treatment," Expected, December, 2013.
5. Mian Fu, "Interdiffusion Study of Magnesium-AA6061 System," June 2013, Entered University of Central Florida for Doctoral Program in Materials.
6. YoungJoo Park, "Interdiffusion Reaction Between Uranium-Zirconium and Iron," June 2013, Entered University of Central Florida for Doctoral Program in Materials.
7. Clara Hofmeister, "Development of Nitrogen Concentration during Cryomilling of Aluminum Composites," June 2013, Entered University of Central Florida for Doctoral Program in Materials.
8. Catherine Kammerer, "Diffusion in Binary Mg Solid Solution with Al or Zn Additions," March 2013, Entered University of Central Florida for Doctoral Program in Materials.
9. Dongho Shin, Korean Military Academy Fellow, "Lightweight Composites for Resistance Against High Strain Rate Deformation," July, 2012, Returned to Korean Armed Forces, Republic of Korea.
10. Ashley Ewh, "Effects of Allotropic Transformation on Interdiffusion in Binary Systems," July, 2012, Entered Northwestern University for Doctoral Program in Materials Science and Engineering.
11. Joshua Bush, "Phase-field Simulation of Thermotransport in U-Zr Alloys," April, 2012, Employed at Special Metals Incorporated, Huntington, WV, USA.
12. Carmen Bargraser, "Quantitative Microstructural Degradation of Dense Vertically Cracked Thermal Barrier Coatings," November, 2011, Employed at Siemens Power Generation Incorporated, Orlando, FL, USA.
13. Catalina Uribe, "Microstructural Evolution of SiC<sub>p</sub> Reinforced Al Metal Matrix Composites During Successive Hot Rolling," October, 2011, Employed at Mitsubishi Power Systems, Orlando, FL, USA.

14. Sripiana Mukherjee, "Quantitative Microstructural Degradation of Electron-Beam Physical Vapor Deposited Thermal Barrier Coatings," July, 2011, Entered North Carolina State University for Doctoral Program in Chemistry.
15. Sarah Brennan, "Impurity and Interdiffusion in Mg-Al Systems," June, 2011, Employed at U.S. Army Research Laboratory, Aberdeen Proving Ground, MD, U.S.A.
16. Jean-Paul Vega-Garcia, "Microstructural Investigation of Precipitation Hardened Cu-Ni-Si-Zr Alloys for Rotor Application," July, 2010, Employed at Siemens Power Generation Incorporated, Orlando, FL, USA.
17. Brittany Kerr, "Strengthening Potential of Single-Wall Carbon Nanotubes in Phenolic Resin Composites," March, 2010, Employed at Lockheed-Martin Corporation, Houston, TX, USA.
18. Zhengtao Yang, "Development of Surface Modification Techniques for Synthesis of Hybrid Tungsten Nanopowders," June, 2009, Entered University of Kentucky for Doctoral Program in Materials.
19. Travis Patterson, "Process Optimization of Air Plasma Spray for Thermal Barrier Coatings," November, 2008, Employed at Mitsubishi Power Systems, Orlando, FL, USA.
20. Bradford Tipton, "Development of Epoxy-based Thin Films for Carbon Epoxy Composites Against Ultraviolet Radiation," November, 2008, Employed at Gulfstream Aerospace Corporation, Savannah, GA.
21. Barbara Franke, "Non-Destructive Evaluation of Thermal Barrier Coatings by Thermal Wave Imaging and Photo-Stimulated Luminescence Spectroscopy", July, 2005, Employed at Solar Turbines Incorporated, San Diego, CA, USA.
22. Emmanuel Perez, "Interdiffusion Analysis of NiAl vs. Superalloys," July, 2005, Entered University of Central Florida for Doctoral Program in Materials.
23. Jing Liu, "Thermal Barrier Coatings and Metallic Coatings with Improved Durability", July, 2004, Entered University of Central Florida for Doctoral Program in Materials.
24. Srinivas Vishweswaraiyah, "Microstructural Evaluation of Thermal Barrier Coatings by Electrochemical Impedance Spectroscopy", May, 2004, Employed at Prematech International, Incorporated, Worcester, MA, USA.
25. Abby Puccio, "Development of Analytical Techniques to Assess Multicomponent Interdiffusion Coefficients," May, 2004, became a full-time mom.
26. Sankar Laxman, "Phase Transformation of Thermally Grown Alumina Scale During Electron Beam Physical Vapor Deposition of Thermal Barrier Coatings", November, 2003. Employed at Canadian Nuclear Regulatory Commission, Canada.
27. Mu Nan, "Isothermal Oxidation and Phase Transformation of Aluminized CMSX-4 Superalloys", August, 2003. Entered Iowa State University for Doctoral Program in Materials.
28. Balaji Jayaraj, "Development of Electrochemical Impedance Spectroscopy as a Non-Destructive Inspection Technique for Thermal Barrier Coatings", August, 2003, Entered University of Central Florida for Doctoral Program in Materials Science and Engineering.
29. Deepa Shenoy, Co-Advised with Dr. Sundram (ECE), "Diffusion Analysis of Ni in Au-Sn Solder", December, 2002. Entered University of Central Florida for Doctoral Program in Electrical Engineering.

#### **Post-Doctoral Research Scholars**

1. Bo Yao, "Transmission Electron Microscopy of Superlightweight Metal Matrix Composites, December, 2008 – July, 2011, Employed as Materials Scientist at Pacific Northwest National Laboratory, Richland, WA, USA.
2. HyunJu Choi, "Microstructural Characterization and High Temperature Oxidation," December, 2008 – November, 2010, Employed as Senior Researcher at Korea Automotive Technology Institute, CheonAn, Korea.
3. Wei Fei, "Development of Surface Modification Techniques for Synthesis of Hybrid Tungsten Nanopowders," June, 2007 – July 2008, Employed as Materials Engineer at Belac LLC, Oldsmar, FL, 34677, USA.
4. Jaiwon Byeon, "Non-Destructive Evaluation and Microstructural Analysis of High Temperature Materials and Coatings," May, 2004 – May, 2006, Employed as an Assistant Professor at Ulsan University, Ulsan, Korea.
5. Soo-Jik Hong, "Microstructural Characterization of Nanostructured Alloys," March, 2005 – May, 2005, Employed as an Assistant Professor at Kongju National University, Kongju, Korea.
6. Brian W. Kempshall, "Scanning-High Resolution Transmission Electron Microscopy of Thermal Barrier Coatings", May 2002 – April 2003, Employed as a Senior Engineer at NanoSpective Corporation, Orlando, FL, USA.
7. Santosh K. Jha, "Development of Alumina Coatings for Extending the Life of Thermal Barrier Coatings", April 2001 – July 2002, Employed as a Senior Engineer at Surmet Corporation, Burlington, MA, USA.

#### **Undergraduate Research Assistant**

1. Andrew Jungwon Kang, USDOS WEST Fellow, "Diffusion in Refractory Metals," November, 2012 – July, 2013.



2. Junglim Yoo, USDOS WEST Fellow, "Microstructure Analysis of Corroded Steels," September 2012 – May 2013.
3. Ilgu Kang, USDOS WEST Fellow, "Diffusion in Mg and Mg Alloys," July 2012 – December 2012.
4. Alexander Kushma, "Microstructural Characterization of Gas Atomized Magnesium Powders," July 2012 – August 2012.
5. Joseph Hamilton, "Understanding of Severe Plastic Deformation in Mg-Alloys," May 2010 – August 2012, Entered Ph.D. Program at Virginia Institute of Technology, Blacksburg, VA.
6. Katrina Bermudez, "Interdiffusion between Mg and Y," May 2010 - August 2012, Entered Ph.D. Program at Rensselaer Polytechnic Institute, Troy, NY.
7. Judith Dickson, "Interdiffusion between Zr and Al alloys," May 2010 – August 2012, Entered Ph.D. Program at Georgia Institute of Technology, Atlanta, GA.
8. Sarah Harary, "Microstructural Characterization of Lightweight Composites," Visiting Research Assistant from Washington University at Saint Louis, May, 2011 – August, 2011.
9. Ashley Ewh, "Multicomponent Diffusion in U-Mo vs. Al Couples with Quaternary Alloying Additions," September, 2007 – May, 2011, Entered BS/MS Program at University of Central Florida, Orlando, FL.
10. Clara Hofmeister, "Microstructural Characterization of Al-base Metal Matrix Composites," 2008 – 2009, Entered MS Program at University of Central Florida, Orlando, FL.
11. Carmen Bargraiser, "Microstructural Characterization of Thermal Barrier Coatings," 2008 – 2009, Entered MS Program at University of Central Florida, Orlando, FL.
12. Andrew Shon, "Microstructural Analysis of Cu-Ni-Si-Zr Alloys," September, 2008 – May, 2009.
13. Ananda Leon, "Microstructural Characterization of Thermally Sprayed Ceramic Coatings," November, 2005 – December, 2008.
14. Monica Hopkins, "Oxidation Behavior of TiAlC," June, 2005 – April, 2006, Now with NASA-Kennedy Space Center, FL.
15. Nathan Hotaling, "Processing of High Temperature Coatings by Air Plasma Spray and High Velocity Oxy-Fuel Deposition," June, 2005 – July, 2007, Entered Doctoral Program in Materials at Georgia Institute of Technology, Atlanta, GA.
16. Travis Patterson, "Experimental Diffusion Couple Studies," August, 2003 – April, 2006, Entered M.S. Materials Program at University of Central Florida.
17. Michael Thompson, "Plasma Spray and High Velocity Oxy-Fuel Deposition Process Control for Thermal Barrier Coatings," January, 2006 – April, 2006, Now with Lockheed-Martin Missiles and Fire Control, Orlando, FL.
18. Candice Wirth, "Microstructural Characterization of Thermally Sprayed Ceramic Coatings," November, 2005 – December, 2005, Now with Lockheed-Martin Missiles and Fire Control, Orlando, FL.
19. David J. Miranda, "Non-Destructive Inspection of High Temperature Materials and Coatings," May, 2004 – July 2005, Now with NASA-Kennedy Space Center.
20. Elizabeth Jordan, NSF-REU Fellow from University of Connecticut, "Microstructural Characterization of Solution-Precursor Plasma Sprayed Thermal Barrier Coatings", May, 2004 – July 2004, Now with Pratt & Whitney, West Hartford, CT.
21. Barbara Franke, "Photostimulated Luminescence for Thermal Barrier Coatings", May, 2002 – April 2004, Obtained M.S. at University of Central Florida, Now with Solar Turbine Incorporated, San Diego, CA.
22. Charles O'Toole, "Statistical Analysis of Photo-Stimulated Luminescence Spectroscopy for Thermal Barrier Coatings", January, 2004 – July, 2004.
23. Christine Cruz, "Development of Analytical Techniques for Multicomponent Diffusion in Alloys," November, 2003 – December, 2004, Now at NASA-Kennedy Space Center.
24. Vincent Ng, "Statistical Analysis of Non-Destructive Inspection Techniques for Thermal Barrier Coatings", August, 2003 – December 2003, Now at Lockheed-Martin Missiles and Fire Control, Orlando, FL.
25. Brain Farnsworth, "Development of Photo-Stimulated Luminescence Spectroscopy and Electrochemical Impedance Spectroscopy as a Non-Destructive Inspection Technique for Plasma Sprayed Coatings", May, 2003 – August, 2003, Now a Mechanical Graduate Student at University of Central Florida.
26. Chris Petorak, "Development of Electrochemical Impedance Spectroscopy as a Non-Destructive Inspection Technique for Plasma Sprayed Coatings", May, 2002 – April 2003, Now at Purdue University for Doctoral Program in Materials.
27. Abby Lee Elliot, "Fundamental Concepts and Experimental Techniques for Multicomponent Diffusion in Alloys," May, 2002 – July, 2002. Continued as a Materials Graduate Student at University of Central Florida.
28. Ron Walvick, NSF-REU Fellow from Rutgers University, "Evaluation and Characterization of Nanostructured Oxide Coatings by Laser Direct Deposition", May, 2002 – July, 2002.

#### **International Visiting Scholar**

1. T.H. Noh, Professor, Department of Materials Science and Engineering, Andong National University, January, 2011 ~ December, 2011.

2. I.Y. Ohm, Professor, Department of Materials Science and Engineering, Seoul National University of Technology, January, 2011 ~ December, 2011.
3. J.G. Kim, Professor, Department of Materials Science and Engineering, Pusan National University, February 12, 2010 ~ February 11, 2011.
4. G.A. Lee, Associate Professor, School of Advanced Materials Engineering, Andong National University, August 1, 2009 ~ May 31, 2010.
5. G.C. Jeong, Professor, Department of Advanced Materials Engineering, Korea Polytechnic University, August 15, 2008 ~ August 14, 2009.
6. K.B. Park, Professor, School of Advanced Materials Engineering, Andong National University, January 15, 2006 ~ January 14, 2007.
7. S.H. Rhee, Professor, Department of Mechanical Engineering, Hanyang University, August 15, 2003 ~ August 14, 2004.
8. C.K. Lee, Professor, Department of Mechanical Engineering, Seoul National University of Technology, December 1, 2002 ~ November 30, 2003.

#### Others as Instructor of Independent Studies

1. Srinivas Vishweswaraiyah, "Fundamental Concepts and Experimental Techniques for Multicomponent Diffusion in Alloys," January, 2002 – April, 2002.
2. Varun Mathur, "Diffusional and Convective Modeling of Hydrogen and Helium Leak", June, 2001 – April, 2002.

#### Others as a Thesis/Dissertation Committee Member

1. Jinling Liu, Ph.D. Candidate, "High Volume Fraction Mg/SiC Nanocomposites: Processing, Microstructure and Mechanical Behavior," Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida, in Progress.
2. Danielle Belsito, Ph.D., "Application of Computational Thermodynamics and Solidification Kinetics to Cold Sprayable Powder Alloy Design," January, 2014, Department of Mechanical Engineering (Materials Science and Engineering), Worcester Polytechnic Institute.
3. Andrew Warren, Ph.D., "Synchrotron X-ray Scattering Investigation of the Morphological Evolution of Buried Thin Film Interfaces," March, 2013, Department of Materials Science and Engineering, University of Central Florida.
4. Yan Chen, Ph.D., "Scandia and Ceria Stabilized Zirconia Based Electrolytes and Anodes for Intermediate Temperature Solids Oxide Fuel Cells," February, 2013, Department of Materials Science and Engineering, University of Central Florida.
5. Mei Yang, Ph.D., "Nitriding – Fundamentals, Modeling and Process Optimization, Department of Mechanical Engineering, Worcester Polytechnic Institute, Worcester, MA, April, 2012.
6. Duy Le, Ph.D., "First Principle Studies of Pattern Formations and Reactions on Catalysis Surfaces," Department of Physics, University of Central Florida, March, 2012.
7. James P. DeMarco Jr., M.S., "Mechanical Characterization and Numerical Simulation of Light-weight Aluminum A359 Metal-Matrix Composites," July, 2011, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
8. Zichao Xia, M.S., "Effects of Neutron Irradiation on the Mechanical Properties of B.C," April, 2011, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
9. David Shelton, Ph.D., "Tunable Infrared Metamaterials," April, 2010, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
10. Jason Croy, Ph.D., "Structural, Electronic, Vibrational, and Catalytic Properties of Supported Mono and Bimetallic Pt and Fe Nanoparticles," March, 2010, Department of Physics, University of Central Florida.
11. Tik Sun, Ph.D., "Classical Size Effect in Oxide-Encapsulated Cu Thin Films: Impact of Grain Boundaries versus Surface on Resistivity," December, 2009, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
12. Arun Menon, M.S., "Sintering Additives for Nanocrystalline Titania and Processing of Porous Bone Tissue Engineering Scaffolds," March, 2009, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
13. Bo Yao, Ph.D., "On the Phase and Structural Evolution of Annealed [Fe/Pt]<sub>n</sub> Thin Films for Exchange Spring Magnets," November, 2008, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
14. Nilindu U.M. Muthubandra, M.S., "Modeling of Heat and Mass Transport in Composite Materials," October, 2008, School of Engineering, University of Newcastle, Australia.

15. Rajendra D. Vaidya, Ph.D., "Electrochemical Monitoring of Corrosion in Drinking Water Systems to Identify Metal Release and Associated Water Quality Impacts," October, 2007, Department of Civil and Environmental Engineering, University of Central Florida.
16. Chaitali China, M.S., "Magnetic Properties of Sputter Deposited Fe-based Amorphous Thin Films for Resonator Applications," July, 2006, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
17. Santosh Kumar, M.S., "Density-Functional Theory Applied to Problems in Catalysis and Electrochemistry," July, 2006, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
18. Yiguang Wang, Ph.D., "Polymer-Derived Si-Al-C-N Ceramics: Oxidation, Hot-Corrosion and Structural Evolution," November, 2005, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
19. Anant H. Jahagirdar, Ph.D., "Solar Driven Photoelectrochemical Water Splitting For Hydrogen Production Using Multiple Bandgap Tandem of CIGS2 PV Cells and Thin Film Photocatalyst," November, 2005, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
20. Luis Manuel Rodriguez Cordoves, Honors B.S. "Design of a Monolithic Bipolar Junction Transistor Amplifier in the Common Emitter with Cascaded Common Collector Configuration," July, 2004, The Barnett Honors College, University of Central Florida.
21. Weizhong Xiao, Ph.D., "Effects of Solution Chemistry on Corrosion of Copper and Lead Pipes: Corrosion Kinetics and Mechanisms", May, 2004, Department of Civil and Environmental Engineering, University of Central Florida.
22. Adrian Little, M.S., "Diffraction Study of Shape Memory NiTi During Tensile and Compressive Loading," December, 2003, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
23. Lavanya Bharadwaj, M.S., "Synthesis and Oxidation Behavior of Polymer-Derived SiCN and SiAlCN Amorphous Ceramics," March, 2003, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
24. Ankur Anant Kadam, M.S. "Development of Large Area Copper Indium Gallium Disulfide (CIGS2) Thin Film Solar Cells on Stainless Steel Foil for Space Applications, September, 2002, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
25. Kitty Elshot, M.S., "A Study of Ion Implanted and Diffused Calcium in Film and Bulk Silica", September, 2002, School of Optics, University of Central Florida.
26. Ashfaq Hussain, Ph.D., "Chemical Vapor Deposition of Carbon Nanotubes," June 2002, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
27. Anirban Guha, M.S., "Fabrication of two-port resonators using different types metal electrodes and substrates", March, 2002, Department of Electrical and Computer Engineering, University of Central Florida.
28. Prakash Varghese, M.S., "Effects of Water Vapor on the High Temperature Strength of Alumina Matrix Nextel 720 Fiber Reinforced CMC", October, 2001, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
29. Jianqi Zhang, Ph.D., "Development of Electrochemical Impedance Spectroscopy for Thermal Barrier Coatings", August, 2001, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.
30. Jindong Cheong, M.S., "The Synthesis of Carbon Nanotubes by Catalytic Pyrolysis of Fullerenes and by Arc Discharge Method, July, 2001, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida.

### **K-12 Science Project Supervision and Educational Activities**

1. Jiye Park, "Light Bulb: How It Works and Why It Fails," Best of Show at Castle Creek Elementary School Science Fair, April, 2007.
2. Kiran Bijani, "CMAS Degradation of Thermal Barrier Coatings," Satellite High School, 2006-2007, *2nd Place* in Earth/Space.
3. Program Chair, ASM Materials One-Day Camp, University of Central Florida, Orlando, FL, April 8, 2006.
4. Kiran Bijani, "Attenuation of Luminescence through Yttria-Stabilized Zirconia," Satellite High School, 2005-2006, *1<sup>st</sup> Place* in Earth/Space, Runner-Up Best of Show, Bid to State Science and Engineering Fair in Orlando Bid to Orlando Science Center Challenge
5. Ryan DiMaria, "Phase-Field Simulation of Freezing in Water," Satellite High School, 2005-2006, *1<sup>st</sup> Place* in Math, Florida State Science and Engineering Fair, Orlando Science Center Challenge, Orlando, FL.
6. Program Chair, ASM Materials One-Day Camp, University of Central Florida, Orlando, FL, March 12, 2005.
7. Kiran Bernard, "Residual Stress in Thermally Grown Oxide on NiAl Substrate," Satellite High School, *2nd Place* in Earth/Space, Brevard County Science Fair, State of Florida, 2004-2005.
8. Muna Bijani, "Materials Science and Engineering for Visually Impaired," Edgewater High School, Edgewater, Orlando, Florida, 2004.

9. Sunny La, "Photo Essay: A Day in Life of a Materials Engineer," Winter Park Junior High School, Winter Park, Florida, 2003.
10. Nikita Kathuria, "Residual Stress and Thermal Expansion Mismatch," County and State Finalist, Orange County, State of Florida, 2002.

## STUDENT\* ACHIEVEMENTS

\*Students who were supported as research assistant through research contracts and grants awarded to Y.H. Sohn

Balaji Jayaraj, M.S., 2003 & Ph.D. 2001:

- **2003 UCF M.S. Thesis of the Year, University of Central Florida**

Abby Puccio, M.S., 2003

- **2003 Presidential Fellowship, University of Central Florida**
- **NASA Astronaut Scholarship, NASA-KSC.**

Jing Liu, M.S., 2004 & Ph.D., 2007:

- Invited Speaker (All Expense Paid) at 4<sup>th</sup> Overseas and Domestic Youth Forum on Materials Science, Chinese Materials Research Society, October 12-16, 2007, Chongqing, China.
- **2004 and 2005 Zontal International Amelia Earhart Fellowship**
- 2007 Austin L Grogan Memorial Scholarship
- **Sapphire Award of Graduate Excellence in Materials Science (GEMS) Awards, Basic Science Division of the American Ceramic Society, 2006.**
- 1st Place, 2006 Student Poster Competition, ASM International Central Florida Chapter
- Graduate Travel Award, UCF, 2003, 2006

Emmanuel Perez, M.S., 2004 & Ph.D., 2011

- 2004 University Turbines Systems Summer Research Fellowship, General Electric
- 2005 University Turbines Systems Summer Research Fellowship, General Electric
- 2006 University Turbines Systems Summer Research Fellowship, General Electric

Barbara Franke, M.S., 2005

- University Turbine Systems Research Fellowship Recipient 2004, Solar Turbines
- Honeywell Leadership Scholarship, 2004
- Austin L. Grogan Memorial Scholarship, 2004
- University Turbine Systems Research Fellowship Recipient 2003, Solar Turbines

Garimella Narayana, Ph.D., 2009

- Graduate Travel Award, UCF, 2006

Travis Patterson, M.S., 2007

- **Oak Ridge Institute for Science and Education (ORISE) Fellowship, 2009.**
- University Turbine Systems Research (UTSR) Gas Turbine Industrial Fellowship, 2008
- University Turbine Systems Research (UTSR) Gas Turbine Industrial Fellowship, 2007
- University Turbine Systems Research (UTSR) Gas Turbine Industrial Fellowship, 2006
- University Turbine Systems Research (UTSR) Gas Turbine Industrial Fellowship, 2005
- Tau Beta Pi, National Engineering Honor Society, 2003
- Pi Tau Sigma, National Mechanical Engineering Honor Society, 2003
- Bright Futures Florida Medallion Scholarship, 2001

Prabakar Mohan, Ph.D., 2010

- 2004 Graduate Travel Award, UCF
- 2007 Graduate Travel Award, UCF

Rashmi Mohanty, Ph.D., 2009

- 2nd Place, 2006 Student Poster Competition, ASM International Central Florida Chapter
- Graduate Travel Award, UCF, 2006

Ashley Ewh, BS/MS, 2012

- **2012 UCF M.S. Thesis of the Year, University of Central Florida**
- **Goldwater Scholarship, 2008**
- **Astronaut Scholarship, 2008 and 2009.**
- **Idaho National Laboratory Summer Research Fellow, Summer, 2009.**
- **UCF Order of Pagasus, 2011**
- **UCF Founder's Day Award, 2011**

Joseph Hamilton, B.S., 2012

- Honorable Mention, Showcase of Undergraduate Research Excellent, 2011

Judith Dickson, B.S., 2012

- J. Wesley Floreth Scholarship, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), 2011
- Bill Dillard Scholarship, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), 2011

Clara Hofmeister, M.S., 2013

- **Oak Ridge Institute for Science and Education (ORISE) Fellowship, 20.**

Catherine Kammerer, M.S., 2013, Ph.D. in Progress.

- 2012 Teaching Assistant of the Year, College of Engineering and Computer Science, University of Central Florida, 2012

## COURSES TAUGHT

Undergraduate: *Structure and Properties of Materials (ABET Coordinator); EGN 3365*

Atomic structure and bonding; crystal structure and imperfections; diffusion; phase diagrams; solidification; phase transformation; heat treatment; mechanical; electrical; optical; thermal; magnetic properties; materials characterization.

*Fall, 2013: (Upcoming) Response in Excellent and Very Good Categories (Out of 174 Enrolled)*

*Fall, 2011: 80% Response in Excellent and Very Good Categories (Out of 90 Enrolled)*

*Spring 2010: 95% Response in Excellent and Very Good Categories (Out of 90 Enrolled)*

*Spring 2008: 87% Response in Excellent and Very Good Categories (Out of 67 Enrolled)*

*Fall 2005: 75% Response in Excellent and Very Good Categories (Out of 78 Enrolled)*

*Spring 2005: 85% Response in Excellent and Very Good Categories (Out of 69 Enrolled)*

*Spring 2003: 60% Response in Excellent and Very Good Categories (Out of 52 Enrolled)*

*Spring, 2002: 50% Response in Excellent Category (Out of 51 Enrolled)*

*Summer, 2001: 81% Response in Excellent and Very Good Categories (Out of 38 Enrolled)*

*Honors Structure and Properties of Materials; EGN 3365H*

Atomic bonding; lattices; phonons; crystal structure; diffraction and structural factors; defects; diffusion; phase equilibria, diagrams and thermodynamics; transformations kinetics; mechanical, thermal, electrical, optical, and magnetic properties.

*Spring, 2014: Upcoming (Out of 20 Enrolled)*

*Experimental Techniques in Materials and Mechanics; EMA 3012C with 12 Laboratory Modules*

Experimental laboratories on optical metallorgraphy, X-ray diffraction, heat treatment and microstructure, scanning electron microscopy tensile testing, hardness measurement, impact testing, differential scanning calorimetry, advanced topics of characterization and testings.

*Fall, 2012; 93% Response in Excellent and Very Good Categories (Out of 54 Enrolled)*

Graduate: *Intermediate Structure and Properties of Materials; EMA 5104*

Atomic structure and bonding; crystal structure and imperfections; diffusion; thermodynamics; phase diagrams; solidification; phase transformation; heat treatment; mechanical properties; dislocation theory; strengthening mechanisms; electrical; optical; thermal; magnetic properties; materials characterization.

*Fall, 2010: 100% Response in Excellent and Very Good Categories (Out of 24 Enrolled)*

*Fall, 2004: 94% Response in Excellent and Very Good Categories (Out of 22 Enrolled)*

*Fall, 2001: 75% Response in Excellent and Very Good Categories (Out of 28 Enrolled)*

*Kinetics of Materials; EMA 5317*

Irreversible Thermodynamics, Driving Forces and Fluxes, Mathematics, Diffusion Equations and Solutions, Atomic Models for Diffusion, Diffusion in Crystals, Diffusion along Imperfections, Diffusion in Non-Crystalline, Motion of Dislocation, Motion of Crystalline Surfaces, Motion of Interfaces, Capillary Forces, Coarsening, Creep, Sintering, Spinodal Decomposition, Order/Disorder, Nucleation and Growth, Solidification, Precipitation

*Spring 2013: Current*

*Spring 2011: 100% Response in Excellent and Very Good Categories (Out of 19 Enrolled)*

*Spring 2007: 87% Response in Excellent and Very Good Categories (Out of 18 Enrolled)*

*Spring 2009: 50% Response in Excellent and Very Good Categories (Out of 17 Enrolled)*

*High Temperature Materials; EMA 5705*

Crystal Structures, Defects and Diffusion, Thermodynamics and Phase Diagram, Mechanical Behavior of Materials, Thermo-Mechanical Behavior of Materials, Strengthening Mechanisms, Creep, Stress Rupture, Fatigue, Thermal Fatigue, Processing of Superalloys including Casting, Wrought, Powder, Joining, Surface Stability, Corrosion and Oxidation, Thermal Barrier Coatings, Alloy Design, Ni-, Co-, Fe-Ni-base Superalloys, Ti-Alloys, Structural Ceramics and Composites, Intermetallics.

*Fall, 2003: 100% Response in Excellent and Very Good Categories (Out of 13 Enrolled)*

*Spring, 2012: 100% Response in Excellent and Very Good Categories (Out of 12 Enrolled)*

*Physical Metallurgy; EMA 6126*

Structure of Metals, Analytical Methods, Crystal Binding, Dislocations, Grain Boundaries, Vacancies, Annealing, Solid Solution, Phase Equilibrium, Phase Diagrams, Diffusion, Solidification, Nucleation and Growth, Twinning, Martensitic Transformations, Selected Alloy Systems

*Fall, 2007: 87% Response in Excellent and Very Good Categories (Out of 18 Enrolled)*

*Diffusion in Solids; EMA 6136*

Reference frames; fluxes; Fick's laws and selected solution; mechanisms of diffusion; kinetics and irreversible thermodynamics; thermally activated process; self-diffusion; correlation factor; intrinsic and interdiffusion; binary and multicomponent diffusion; measurement techniques; applications; diffusion in oxides; semiconductors and other class of materials; numerical simulations.

*Fall, 2008: 67% Response in Excellent and Very Good Categories (Out of 12 Enrolled)*

*Spring, 2006: 100% Response in Excellent and Very Good Categories (Out of 6 Enrolled)*

*Spring, 2004: 100% Response in Excellent and Very Good Categories (Out of 7 Enrolled)*

*Fall, 2002: 73% Response in Excellent and Very Good Categories (Out of 21 Enrolled)*

*Spring, 2001: 100% Response in Excellent and Very Good Categories (Out of 22 Enrolled)*

## SYNERGISTIC AND PUBLIC SERVICE ACTIVITIES

- Member, Fundamentals Behavior and Characterization Committee, ASM International, Columbus, OH, USA, 2010 – Present.
- Member, Nuclear Materials Committee, TMS, Warrendale, PA, USA, 2007 – Present.
- Member, Alloy Phase Diagram Committee, ASM International, Columbus, OH, USA, 2004 – Present.
- Member, High Temperature Materials Committee, TMS/ASM International, Columbus, OH, USA, 2005 – Present.
- Executive Director, Korean-American Scientists and Engineers Association, Vienna, Virginia, USA, July, 2011 – June 2012.
  - Executive operation for the organization with 5,000 members and \$2.5M annual expenditure
  - Directorial decisions on budget and operation of over 200 local chapter activities and national/international projects
  - Lead the national council (40 members) and national committees (12) on various national/international activities and decision-making including by-laws, policies, scholarship, grants and awards.
- Vice Chair, Alloy Phase Diagram Committee, ASM International, Columbus, OH, USA, 2010 – 2012.
- Member, International Graduate Student Paper Contest Committee, ASM International, Columbus, OH, USA, 2006 – 2011.
- President, Central Florida Chapter, Korean-American Scientists and Engineers Association, Vienna, VA, USA, 2010 - 2011.
- Secretary, Alloy Phase Diagram Committee, ASM International, Columbus, OH, USA, 2007 – 2009.
- Member, Academic Advisory Board, University Turbine Systems Research, USDOE, 2004 – 2007.
- Chair, Atomic Transport Committee, ASM International/TMS Materials Science for Critical Sector, 2003 – 2009.
- Member, Atomic Transport Committee, ASM International/TMS Materials Science for Critical Sector, 2000 – 2002.
- Faculty Representative and Advisor for Barnett Honors College for Department of Mechanical, Materials and Aerospace Engineering at the University of Central Florida
- ABET Coordinator for Undergraduate Introductory Course on Materials Science and Engineering.
- Chairman, ASM International Central Florida Chapter.
- Judge, 2000 International Outstanding Graduate Student Paper Contest Sponsored by The TMS.
- Participant, 2002 ASM International Leadership Days, ASM International, Columbus, OH, USA.
- Serve as a Chair for the Newsletter and Outreach Committee, Member of Education Committee, Member of Industrial Liaison Committee, Chair and Member of Faculty Search Committee, Advanced Materials Processing and Analysis Center at the University of Central Florida.
- K-12 Science Activities for Visually Impaired Children - Materials: Atom Stacking Through Center for Independent Technology and Education and Orlando Science Center

## PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS

American Society of Materials (ASM) International, The Minerals, Metals and Materials Society (TMS)  
 Materials Research Society (MRS), The American Ceramic Society (ACERS)  
 American Vacuum Society (AVS), American Society of Engineering Education (ASEE)  
 American Society of Mechanical Engineers (ASME)  
 American Society of Non-Destructive Testing (ASNT)



## TECHNICAL/PEER REVIEW ACTIVITIES

**Associate Editor** Journal of Phase Equilibria and Diffusion, 2013 - Present

**Reference Book** ASM Materials Handbook  
Smithells Metals Handbook

**Editorial Board** Journal of Phase Equilibria and Diffusion, 2006-2013  
Defects and Diffusion Forum, 2001-2010

**Journals** Metallurgical and Materials Transactions A, Acta Materialia, Journal of Metals  
Journal of the American Ceramic Society, Scripta Materialia, Journal of Applied Physics  
Philosophical Magazine A, Journal of Thermal Spray Technology, Vacuum, CalcPhad  
Materials Science and Engineering A, Journal of Materials Research, Materials Characterization  
Surface and Coatings Technology, Journal of Materials Science, Solid State Phenomena  
Aerospace Science and Technology, Oxidation of Metals, Defects and Diffusion Forum  
Applied Surface Sciences, International Journal of Applied Ceramic Technology  
Journal of Phase Equilibria and Diffusion, Journal of Alloys and Compounds, Corrosion Science,  
Journal of ASTM International, Water Science and Technology, Materials Physics and Chemistry,  
Solid State Sciences

### Funding Agencies and Organizations

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### Numerous Conference Proceedings

### INTERNAL COMMITTEE

- **Member, Undergraduate Program Curriculum Committee, College of Engineering and Computer Science, University of Central Florida, Orlando, FL 32826, 2012 – Present.**
- **Member, Faculty Promotion and Tenure Committee, College of Engineering and Computer Science, University of Central Florida, Orlando, FL 32826, 2012 – 2014.**
- **Member, Radiation Safety Committee, University of Central Florida, Orlando, FL 32826, 2006-Present.**
- Member, MSE Graduate Program Committee, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida, Orlando, FL 32826, 2010-2012.
- Member, Research Incentive Award Selection Committee, College of Engineering and Computer Science, University of Central Florida, Orlando, FL 32826, 2012 – 2013.
- Member, Faculty Promotion and Tenure Committee, Nanoscience and Technology, University of Central Florida, Orlando, FL 32826, 2007 - 2011.
- Chair, External Relations Committee, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida, Orlando, FL 32826, 2009-2010.
- Member, Teaching Incentive Plan (TIP) Selection Committee, College of Engineering and Computer Science, University of Central Florida, FL 32826, 2010 - 2011.
- Member, Faculty Search Committee, Nanoscience and Technology, University of Central Florida, Orlando, FL 32826, 2009-2010.
- Member, Director Search Committee, Advanced Materials Processing and Analysis Center and Nanoscience and Technology Center, University of Central Florida, Orlando, FL 32826, 2008 – 2009.
- Member, University Research Council, University of Central Florida, Orlando, FL 32826, 2006-2008.
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- Chair, Faculty Search Committee, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32826, 2004.
- Chair, Faculty Search Committee, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32826, 2003, Recommended Dr. Jiyu Fang (Hired) as an AMPAC Faculty with Expertise in Bio-Inspired Materials.
- Chair, Faculty Search Committee, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32826, 2003, Recommended Dr. Patrick Schelling (Hired) as an AMPAC Faculty with Expertise in Computational Materials Science.
- Member, Faculty Search Committee, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32826, 2002.
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- Chair, Newsletter and Outreach Committee, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32826.
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