

**Dr. C. SURYANARAYANA, Ph.D., FIMMM, FASM**

Professor and Interim Chair

Department of Mechanical and Aerospace Engineering

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### **EDUCATION:**

Ph.D. (Met. Eng.)	Banaras Hindu University, Varanasi, India	1970
M.S. (Met. Eng.)	Banaras Hindu University, Varanasi, India	1967
B.E. (Metallurgy)	Indian Institute of Science, Bangalore, India	1965
B.S. (Math, Phys, Chem)	Andhra University, Waltair, India	1963

### **CURRENT RESEARCH INTERESTS AND FIELDS OF SPECIALIZATION:**

- Synthesis, Processing, and Characterization of Nanomaterials
- Nanocomposites
- Mechanical Alloying for Synthesizing Advanced Materials
- Rapid Solidification Processing of Metallic Materials and Metallic Glasses
- Quasicrystalline Materials
- Materials Characterization by X-ray Diffraction and Electron Microscopy Techniques
- Coatings for Turbine Materials

### **PROFESSIONAL EXPERIENCE:**

2004 – to-date:	Professor, University of Central Florida, Orlando
2001 – 2004:	Associate Professor, University of Central Florida, Orlando
1997 – 2000:	Research Professor, Colorado School of Mines, Golden
1990 – 1996:	Visiting Professor and Associate Director, Institute for Materials and Advanced Processes, University of Idaho, Moscow
1988 – 1990:	National Research Council Senior Research Associate, Wright-Patterson Air Force Base, Dayton, OH
1982 – 1988:	Professor of Physical Metallurgy, Banaras Hindu University, Varanasi, India
1973 - 1982:	Reader in Physical Metallurgy, Banaras Hindu University, Varanasi, India
1967 – 1973:	Lecturer in Metallurgy, Banaras Hindu University, Varanasi, India

### Short-Term Visiting Assignments

- 8/2012 – 8/2013 Jefferson Science Fellow, Department of State, Washington, DC
- 7/2010 – 8/2010 Visiting Professor, NIMS, Tsukuba, Japan
- 4/2009 – 8/2009 Visiting Professor, Tohoku University, Sendai, Japan
- 6/2008 – 8/2008 Visiting Professor, Institute of Metals Research, Chinese Academy of Sciences, Shenyang, China
- 3/2008 – 5/2008: JSPS Senior Visitor at NIMS, Tsukuba, Japan
- 2/2008 – 3/2008: Visiting Professor, NIMS, Tsukuba, Japan
- 8/2007-1/2008: Visiting Professor, Tohoku University, Sendai, Japan
- 2007: Visiting Professor, Helmut-Schmidt University, Hamburg, Germany
- 2006: Visiting Professor, Helmut-Schmidt University, Hamburg, Germany
- 2005: Visiting Scientist at the GKSS Research Center, Geesthacht, Germany
- 2004: Visiting Scientist at the GKSS Research Center, Geesthacht, Germany
- 2003: Visiting Scientist at the GKSS Research Center, Geesthacht, Germany
- 2002: Visiting Scientist at the GKSS Research Center, Geesthacht, Germany
- 2001: Visiting Scientist at the GKSS Research Center, Geesthacht, Germany
- 1996: Visiting Professor, Chungnam National University, Taejon, South Korea
- 1986: Visitor to Oxford, Cambridge and Sheffield Universities in U.K. under the British Council program of Academic Links Interchange Scheme (ALIS).
- 1979 – 1980: Japan Society for Promotion of Science (JSPS) Fellow, Tohoku University, Sendai, Japan
- 1973: Visiting Scientist, Atomic Energy Establishment, Mol, Belgium
- 1973: Royal Society Commonwealth Bursar, University of Oxford, Oxford, UK

### **ACADEMIC AWARDS, HONORS, AND DISTINCTIONS:**

- 2012: Selected as a Jefferson Science Fellow by the U.S. National Academies to work for one year at the U.S. State Department in advising on science policy matters.
- 2011: **Listed by Thomson Reuters as one of the top 100 researchers (actual number is 40) in the field of materials science who achieved the highest citation impact scores for their papers published since January 2000.**
- 2003: **Listed by the Institute of Scientific Information as one of the 214 most cited researchers in materials science from 17 countries (including USA, UK,**

**Japan, Germany, France, ...)**

- 2012: University of Central Florida Teaching Incentive Program (TIP) Award
- 2012: Alternate member, University Senate
- 2012: Member, University RIA Committee
- 2012: Member, CECS RIA Committee
- 2012: Member, CECS Awards Committee
- 2012: Chairman, MMAE Honors and Awards Committee
- 2010: MMAE Teacher of the Year Award (Undergraduate level)
- 2009: MMAE Teacher of the Year Award (Graduate level)
- 2009: Member, Joint Commission on Metallurgical and Materials Transactions
- 2008: Senior Visitor Award by the Japan Society for Promotion of Science.
- 2008: Lee Hsun Research Award by the Chinese Academy of Sciences, Shenyang, China.
- 2007: ASM-IIM Lectureship Award
- 2006: University of Central Florida Teaching Incentive Program (TIP) Award
- 2005 – to-date: Member, Editorial Advisory Board of Materials and Manufacturing Processes, published by Taylor and Francis.
- 2004 – 2007: Graduate Coordinator, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida
- 2003 – to-date: Member, Editorial Advisory Board of International Materials Reviews, published by ASM International and Institute of Materials, London, UK
- 2003 – to-date: Member, Editorial Advisory Board of Journal of Materials Engineering and Performance, published by Springer.
- 2003 – to-date: Listed in Marquis Who's Who in America
- 2003: University of Central Florida MMAE Department Researcher of the Year award
- 2001: International Expert on Mechanical Alloying to advise scientists at the GKSS Research Center, Geesthacht, Germany.
- 1999 – to-date: Member, Editorial Advisory Board, Journal of Metastable and Non-Equilibrium Materials, published by TransTech Publications.
- 1999 – to-date: Member of Editorial Committee, Powder Metallurgy Briefs, published by Metal Powder Industries Federation
- 1998 – to-date: Member, Editorial Advisory Board, Materials Science and Engineering A, published by Elsevier.
- 1998: Awarded the DISTINGUISHED ALUMNUS AWARD by Banaras Hindu University, Varanasi, India
- 1995: Elected Fellow of ASM International

- 1994 – to-date: Member, Board of Reviewers, Metallurgical and Materials Transactions A of TMS
- 1994: Elected Fellow of the Institute of Materials, London, UK
- 1993: Awarded the Best Technical Paper Award by the Steel Authority of India Ltd., Ranchi for 1992-1993
- 1992: ASM-IIM Lectureship Award
- 1986: Visitor to Oxford, Cambridge and Sheffield Universities in U.K. under the British Council program of Academic Links Interchange Scheme (ALIS).
- 1983: NATIONAL METALLURGIST'S DAY AWARD of the Union Ministry of Steel and Mines, Government of India, for significant contributions to the field of "Rapid Solidification of Metals"
- 1983: Editor, Bulletin of the Electron Microscope Society of India
- 1979 – 1980: Japan Society for Promotion of Science (JSPS) Fellowship for collaborative research at Tohoku University, Sendai, Japan
- 1974: YOUNG SCIENTIST'S MEDAL of the Indian National Science Academy for outstanding contributions to "modern metallography" (for persons below 30 years of age)
- 1973: Royal Society Commonwealth Bursary to carry out research at the University of Oxford, Oxford, UK.
- 1972: Pandya Memorial SILVER MEDAL of the Indian Institute of Metals for the paper adjudged to be of highest merit among those published in their TRANSACTIONS by Associate Members
- 1967: Banaras Hindu University GOLD MEDAL for securing the highest percentage of marks in the M.S. (Met. Eng.) Examination

## **COURSES TAUGHT (at UCF):**

### **Graduate Level**

- EMA 6017: Nanostructured Materials (Special Topics) (Spring 11, Spring 07)
- EMA 6126: Physical Metallurgy (Fall 11, Fall 10, Fall 09, Fall 08, Fall 06, Fall 05, Fall 04, Fall 03, Fall 02, Fall 01)
- EMA 6130: Phase Transformations in Metals and Alloys (Spring 12, Spring 10, Spring 05, Spring 02)
- EMA 6516: X-Ray Diffraction and Crystallography (Spring 06, Spring 04, Spring 03)
- EMA 5504: Modern Characterization of Materials (Summer 01)

### **Undergraduate Level**

- EMA 4506: Emerging Materials (Spring 12, Fall 10, Spring 10, Spring 09)

EGN 3365: Structure and Properties of Materials (Fall 09, Fall 06, Spring 06, Spring 05, Spring 04)

EMA 3706: Structure and Properties of Aerospace Materials (Fall 11, Spring 11, Fall 09, Fall 06, Spring 06, Fall 02)

EMA 3012: Experimental Techniques in Mechanics and Materials (Fall 08, Spring 03, Spring 02, Fall 01, Spring 01)

EMA 3000: Polymeric and Composite Materials (Summer 01)

## **GRADUATE STUDENT DISSERTATIONS AND THESES SUPERVISED:**

### **Ph.D.**

1. G.V.S. Sastry (1981): Electron Microscopic Studies on Rapidly Quenched Aluminum Alloys (Chair)
2. Z.A. Chaudhury (1983): Structure of Rapidly Quenched Aluminum Alloys (Chair)
3. M. Hanumantha Rao (1985): Rapid Solidification of Commercial Aluminum Alloys (Chair)
4. Sheojee Singh (1987): Rapid Solidification Studies of Aluminum-Transition Metal Alloys (Chair)
5. Jyothi Menon (1988): Characterization of Metastable Crystalline and Quasicrystalline Structures in Rapidly Solidified Al-Co Alloys (Chair)
6. C.D. Singh (1989): Texture Analysis in Cold Rolled Austenitic Stainless Steels (Co-Chair)
7. S.K. Pandey (1990): Thermodynamics and Electron Microscopy of Rapidly Solidified Aluminum-Base Alloys (Chair)
8. Deepak Upadhyaya (1995): Development of a Superior Coating System for Continuous Silicon Carbide Fibers for Use in Titanium-Based Metal Matrix Composites.
9. D.K. Mukhopadhyay (1996): Development of Low Activation Oxide Dispersion Strengthened Ferritic Steels for Fusion Reactor.
10. Earl Hixson (2003): The Effect of Intrinsic Stress on the Crystallization of an Amorphous Diffusion Barrier Layer with Applications to Refractory Metals
11. Satyajeet Sharma (Spring 2008): Amorphous Phase Formation in Mechanically Alloyed Fe-based Systems (Chair).
12. U.M.R. Seelam (Spring 2010): Structural Characterization of Sputter-Deposited SS304+xAl (x = 0, 4, 7 and 10 wt.%) Coatings and Mechanically Milled Ti, Zr and Hf Powders (Chair)
13. Jinling Liu (Spring 2013): High Volume Fraction Mg-based Nanocomposites: Processing, Microstructure and Mechanical Behavior (Co-Chair)

**Ph.D. Thesis Committee Member of**

1. Praveen Sinha (1995), Point Defects in Quenched and Mechanically Alloyed Intermetallic Compounds
2. Deepak Upadhyaya (1995), Development of a Superior Coating System for Continuous Silicon Carbide Fibers for Use in Titanium-Based Metal Matrix Composites
3. D.K. Mukhopadhyay (1996), Development of Low Activation Oxide Dispersion Strengthened Ferritic Steels for Fusion Reactor
4. Janice K. Lomness (2001), An Investigation into the Relationship Between the Hydrogen Storage Properties and the Microstructure of Mechanically Alloyed Mixtures of Titanium, Magnesium, and Nickel
5. Soon-Jik Hong (2001), Nanocrystallization Behavior and Consolidation of Rapidly Solidified High Strength Al Alloys
6. Hong-Moule Kim (2001), Microstructures and Wear Properties of High Functional Al Composite Materials
7. D.Y. Maeng (2001), Consolidation and Strength of Rapidly Solidified and Extruded Al Matrix Alloy Composites
8. Brian W. Kempshall (2001), Effects of Bi Grain Boundary Impurity Segregation on the Grain Boundary Diffusion of Ni into  $\langle 100 \rangle$  Cu Symmetric Twist Grain Boundaries
9. Satyajit Shukla (Spring 2002), Synthesis and Characterization of Sol-Gel derived Nanomaterials and Nanocrystalline Electroless Metal Coatings.
10. Stephen M. Schwarz (Spring 2002): Diffusion of Ni through Cu Twist Grain Boundaries and Influence of Diffusion-Induced Recrystallization on Volume Diffusion in Cu-Ni Couples.
11. Islam A. Salama (2003): Laser Doping and Metallization in Wide Bandgap Materials: SiC, GaN, and AlN.
12. Chandrasen Rathod (Fall 2005): Diffraction Studies of Deformation in Shape Memory Alloys and Selected Engineering Components
13. Sudhir Rajagopalan (2005): Deformation Studies of NiTi Shape Memory Alloys Using Instrumented Indentation
14. Zhaoxu Tian (Fall 2005): Laser Metallization and Doping of SiC and Their Applications on Fabrication of SiC Diodes and Endotaxial Layer
15. Vinu Balakrishnan (Fall 2007): Low Temperature NiTiFe Shape Memory Alloys: Actuator Engineering and Investigation of Deformation Mechanisms using in-situ Neutron Diffraction at Los Alamos National Laboratory.
16. Yue Zhao (Fall 2008): Self-Assembled Lipid Tubules: Structures, Mechanical Properties, and Applications
17. Bo Yao (Fall 2008):  $[\text{Fe,Pt}]_n$  Multilayer Thin Film Reactions to form  $L1_0$  FePt and Exchange Spring Magnets.

18. Sachin Kulkarni (Fall 2008): Effect of Composition, Morphology and Semiconducting Properties on the Efficiency of  $\text{CuIn}_{1-x}\text{Ga}_x\text{Se}_{2-y}\text{S}_y$  Thin-film Solar Cells Prepared by Rapid Thermal Processing.
19. Narayana Garimella (Fall 2008): Multicomponent Interdiffusion in Austenitic Ni-, Fe-Ni-Base Alloys and  $\text{L1}_2\text{-Ni}_3\text{Al}$  Intermetallic for High Temperature Applications.
20. Rashmi Ranjan Mohanty (Fall 2008): Phase Field Simulation of Microstructural Development Induced by Interdiffusion Fluxes under Multiple Gradients.
21. R. Mahadevan Manjeri (Summer 2009): Processing-Structure-Properties Correlations in Low Temperature NiTiFe Shape Memory Alloys
22. Emmanuel Perez (Spring 2011): Interdiffusion Behavior of U-Mo Alloys in Contact with Al and Al-Si Alloys.
23. Tanmay Bera (Spring 2012): Developing Surface Engineered Liquid Crystal Droplets for Sensing Applications.
24. Andrew P. Warren (Spring 2013): X-ray Scattering Investigations of Metallic Thin Films.
25. Scott G. Keller (Spring 2013): Creep-Fatigue Crack Initiation and Propagation of a Notched Stainless Steel.
26. Bo Li: Study of Ionomer Degradation within PEMFC Electrode (in progress).
27. Sara Shmalo: In-Situ Neutron Diffraction Investigation of NiTiFe Shape Memory Alloys during Mechanical Loading at Cryogenic and Room Temperatures (in progress).

### **M.S.**

1. A. Ranga Rao (1975): Age Hardening Studies in Magnesium Alloys (Chair)
2. S.K. Tiwari (1976): Structure of a Rapidly Solidified Al-30%Mg Alloy (Chair)
3. L.R.K. Rao (1978): Structure and Mechanical Properties of Melt-Quenched Al-Cu Alloys (Chair)
4. G. Sridhar (1982), Studies on Rapidly Solidified Aluminum Alloy RR 58 (Chair)
5. D.K. Gangopadhyay (1984), Structure of Rapidly Solidified Al-Zr Alloys (Chair)
6. Subash Chandra (1987), Electron Microscopy of Quasicrystalline  $\text{Mg}_{32}(\text{Al},\text{Zn})_{39}$  (Chair)
7. D.K. Mukhopadhyay (1993): Structural Evolution in Mechanically Alloyed Al-Fe Alloys (Co-Chair)
8. Guo-Hao Chen (1993): Mechanical Alloying of  $\text{Ti}_3\text{Al}$ -Based Alloys (Co-Chair)
9. Zhixue Peng (1993): Mechanical Alloying of Niobium-Aluminum Based Powders (Co-Chair)
10. Enhong Zhou (1995): Development of Low Density Ti-Mg Alloys by Mechanical Alloying (Co-Chair)
11. Marilyn V. Kuehn (Fall 2002): Electron Microscopy of Carbon Nanotube Paper (Chair)

12. Devender Singh (Summer 2003): Metastable Phases in Mechanically Alloyed Al-Mg Powders (Chair)
13. Rajesh Neelakantan (Summer 2003): Study of Defects Associated with Implantation of High Dose Vanadium and Chromium into (100) Single Crystal Silicon (Chair)
14. Pushkar Katiyar (Summer 2004): Processing, Microstructural and Mechanical Characterization of Mechanically Alloyed Al-Al<sub>2</sub>O<sub>3</sub> Nanocomposites (Chair)
15. Balaji Prabhu (Fall 2005): Microstructural and Mechanical Characterization of Al-Al<sub>2</sub>O<sub>3</sub> Nanocomposites Synthesized by High-Energy Milling (Chair)
16. Umesh S. Patil (Fall 2005): Structural Evolution in Mechanically Alloyed Fe-Based Powder Systems (Chair)
17. Satyajeet Sharma (2006): Glassy Phases in Mechanically Alloyed Powders (Chair)

### **M.S. Thesis Committee Member of**

1. Mrs. Sutapa Bhaduri (1995): Synthesis and Consolidation of Alumina-Based Nanoceramics
2. Mr. Kedar Sapre (2001): Adsorption Behavior of Imidazoline Inhibitor and Corrosion Product Layer (CPL) Evolution in 1018 C-Steel Exposed to Multiphase Environment.
3. Vivek S. Gade (Fall 2002): Development of Copper Indium Gallium Disulfide, CuIn<sub>1-x</sub>Ga<sub>x</sub>S<sub>2</sub> (CIGS<sub>2</sub>) Thin Film Solar Cells on Large Area Ultra Lightweight Titanium Foils Coated with SiO<sub>2</sub> Barrier Layers
4. Chandrasen Rathod (Spring 2003): An In-Situ Synchrotron X-ray Diffraction Study of Stress-Induced Transformations in NiTi
5. Sachin S. Kulkarni (Summer 2003): Development of Scrubber, Optimization of Deposition Parameters for Large Area CIGS<sub>2</sub> Solar Cells
6. Adrian L. Little (Spring 2004): An In-Situ Neutron Diffraction Study of Shape-Memory NiTi During Tensile and Compressive Loading
7. Jennifer Lemanski (2005): Shape Memory Alloy Actuators for Spaceport Technologies: Materials Characterization and Prototype Testing
8. Nidhi Mahajan (Spring 2005): Self-Assembled Supramolecular Structures of Chiral Phospholipids: Structures, Mechanical Properties and Patterning.
9. Himesh Bhatt (Summer 2005): Synthesis and Characterization of Nanocrystalline Hydroxyapatite Powder and the Effects of Oxide-Based Sintering Additives on Tricalcium Phosphate.
10. Subhaashree Sridharan (Fall 2006): A Methodology for Instrumented Indentation Studies of Deformation in Bulk Metallic Glasses.
11. Sarah Brennan (Summer 2011): Impurity and Interdiffusion in the Mg-Al System.
12. Melan N. Jansz (Summer 2011): Effects of Thermo-Mechanical Loading from in-situ Studies of EB-PVD Thermal Barrier Coatings.



13. Joshua Bush (Spring 2012): Phase-Field Modeling of Thermotransport in Multicomponent Systems.
14. Ashley Ewh (Summer 2012): Effects of Allotropic Transformations on Interdiffusion Behavior in Binary Systems.
15. Dongho Shin (Summer 2012): Microstructural Characteristics of Magnesium Metal Matrix Composites.
16. Catherine C. Kammerer (Spring 2013): Interdiffusion and Impurity Diffusion in Magnesium Solid Solutions.

#### **EDITORIAL ACTIVITIES:**

- Member, Joint Commission on *Metallurgical and Materials Transactions*
- Member, Editorial Board of *Materials Science and Engineering A*
- Member, Editorial Committee of *Journal of Materials Engineering and Performance*
- Member, Editorial Committee of *International Materials Reviews*
- Key Reader and Member, Editorial Advisory Board, *Metallurgical and Materials Transactions A*
- Member, Editorial Board of *Materials and Manufacturing Processes*
- Member, Editorial Board of *Recent Patents in Materials Science*
- Member, Editorial Advisory Board, *Journal of Metastable and Nanocrystalline Materials*
- Member, Editorial Advisory Board, *Nanoscience & Nanotechnology-ASIA*
- Member, Editorial Advisory Board, *Transactions of the Indian Institute of Metals*

#### **REVIEWING ACTIVITIES:**

Reviewed research proposals submitted to the following federal funding agencies:

- National Science Foundation
- Department of Defense
- Department of Energy
- Army Research Office
- Forum on Women In Science and Engineering
- American Chemical Society - Petroleum Research Fund
- University of California Energy Institute

Reviewer of manuscripts for publication in the following **scientific journals**:

- Acta Materialia
- Advanced Engineering Materials
- Advanced Performance Materials
- AIAA Journal of Propulsion and Power

- Applied Physics Letters
- Bulletin of Phase Diagrams
- Combustion and Flame
- Composites A: Applied Science and Manufacturing
- Intermetallics
- Journal of Alloys and Compounds
- Journal of the American Ceramic Society
- Journal of Applied Physics
- Journal of Composite Materials
- Journal of Materials Engineering & Performance
- Journal of Materials Research
- Journal of Materials Science
- Journal of Materials Science Letters
- Journal of Materials Science: Materials in Electronics
- Journal of Materials Synthesis and Processing
- Journal of Non-Crystalline Solids
- Journal of Phase Equilibria
- Journal of Vacuum Society
- Materials and Manufacturing Processes
- Materials Research Bulletin
- Materials Science and Engineering A
- Materials Science and Technology
- Metallurgical and Materials Transactions A
- Nanostructured Materials
- Philosophical Magazine
- Philosophical Magazine Letters
- Physics and Chemistry of Materials
- Powder Metallurgy Briefs
- Reviews in Particulate Materials
- RSC Advances
- Scripta Materialia
- Thin Solid Films
- Transactions of the Indian Institute of Metals
- Ultramicroscopy
- Wear

In addition to the reviewing of manuscripts for archival journals mentioned above, several manuscripts submitted for Conference Proceedings were also reviewed. Specific mention may be made of the following conferences for which a large number of manuscripts were reviewed:

- International Conference on Metals and Alloys: Past, Present and Future, Indian Institute of Technology, Kanpur, December 7-10, 2007 (invited papers) for publication in Journal of Materials Science, Vol. 44, 2009.

- International Conference on Metals and Alloys: Past, Present and Future, Indian Institute of Technology, Kanpur, December 7-10, 2007 (contributed papers) for publication in Transactions of the Indian Institute of Metals, Volume 61, 2008.
- International Conference on Mechanical Behavior of Nanostructured Materials, TMS Annual Meeting, Orlando, Feb 25-Mar 1, 2007, for publication in Materials Science and Engineering A, Vol. 493 (October 2008).
- Nanomaterials, Pittsburgh, PA, 2005
- Processing and Properties of Structural Nanomaterials, Chicago, IL, November 9-12, 2003.
- Surface Engineering in Materials Science II, San Diego, CA, March 2-6, 2003.
- THERMEC 2000, Las Vegas, NV, December 4-8, 2000.
- Ultrafine Grained Materials, Nashville, TN, March 12-16, 2000.
- Tenth International Conference on “Rapidly Quenched and Metastable Materials (RQ-10)”, Bangalore, India, August 22-27, 1999.
- Processing and Properties of Nanocrystalline Materials, Cleveland, OH, October 29-November 2, 1995.
- Second International Conference on “Mechanical Alloying for Structural Applications”, Vancouver, BC, Canada, September 20-22, 1993.
- Third International Conference on “Advanced Materials (ICAM-3)”, Tokyo, Japan, August 31-September 3, 1993.
- Eighth International Conference on “Rapidly Quenched and Metastable Materials (RQ-8)”, Sendai, Japan, August 22-27, 1993.
- First International Conference on Nanostructured Materials, Cancun, Mexico, September 22-26, 1992.
- Seventh World Titanium Conference, San Diego, CA, June 28-July 2, 1992.

#### **PLENARY LECTURES AT INTERNATIONAL CONFERENCES:**

- “Mechanochemical Synthesis of Nanocrystalline Metal Powders” (Eugene Ivanov and C. Suryanarayana), 12<sup>th</sup> International Symposium on Novel and Nano Materials (ISNNM – 2012), Istanbul, Turkey, August 26 – 30, 2012.
- “Nanostructured Materials”, International Winter School on “Advances in Aeronautical Materials and Technologies”, Hyderabad, India, December 15-19, 2010, December 17, 2010.
- “Recent Developments in Nanostructured Materials”, International Conference on “Nanoscience, Nanotechnology, and Advanced Materials (NANOS 2010)”, Visakhapatnam, India, December 17-19, 2010, December 18, 2010.
- “Recent Developments in Mechanical Alloying”, XI IBEROMET International Conference, Viña del Mar, Chile, November 2-5, 2010, November 4, 2010.

- “Nanostructured Materials”, Special Lecture at the XI IBEROMET International Conference, Viña del Mar, Chile, November 3, 2010.
- “Microstructural Characterization of Stainless Steel Coatings”, International Conference on “Advances in Electron Microscopy and Related Techniques” and XXXI Annual Meeting of EMSI, Mumbai, India, March 8-10, 2010, March 10, 2010.
- “Nanostructured Materials” International Conference on “Synthesis, Characterization, Consolidation, and Modeling of Nanomaterials (ICON 2010), Coimbatore, India, March 5-6, 2010. (Conference Theme Lecture) (March 5, 2010).
- Third International Symposium on Functional Materials (ISFM 2009), Jinju, South Korea, June 15-18, 2009.
- International Conference on Frontiers of Metallurgy and Materials Technology, Hyderabad, India, January 29-31, 2009.
- International symposium on “The Role of Universities, Technical Societies, and Government in National Development”, Universidad de Atacama, Copiapó, Chile, September 27-29, 2007.
- 13<sup>th</sup> International Symposium on “Metastable and Nano Materials” (ISMANAM 2006), Warsaw, Poland, August 27-31, 2006.
- International Conference on “Trends in Mechanical Alloying: Science, Technology and Applications”, Jaipur, India, February 21-23, 2001.
- Annual Meeting of the Korean Powder Metallurgy Association, South Korea, November 3, 2000.
- Seminar on “Nanocrystalline Materials”, 48<sup>th</sup> Congress of the Brazilian Association of Materials, Rio de Janeiro, Brazil, July 25-30, 1993.

#### **INVITED RESEARCH SEMINARS/LECTURES:**

- “Nanostructured Materials”, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, January 3, 2011.
- “Advanced Materials and Nanotechnologies”, Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE, December 22, 2010
- “Nanocomposites”, Mahatma Gandhi Institute of Technology, Hyderabad, December 20, 2010.
- “Advanced Materials”, Mahatma Gandhi Institute of Technology, Hyderabad, March 8, 2010.
- Bharat Heavy Electricals Ltd. Corporate R & D Center, Hyderabad, India, January 4, 2010.
- “Bulk Metallic Glasses”, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, November 15, 2009.
- King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, November 14, 2009.

- Tohoku University, Sendai, Japan, August 2009
- National Institute for Materials Science, Tsukuba, Japan, July 23, 2009
- Louisiana State University, Baton Rouge, LA, February 20, 2009.
- Northwestern Polytechnic University, Xi'an, China, July 18, 2008.
- Northwestern Polytechnic University, Xi'an, China, July 17, 2008.
- Shenyang National Laboratory for Materials Science, Shenyang, China, July 8, 2008.
- Shenyang National Laboratory for Materials Science, Shenyang, China, July 3, 2008.
- Kyoto University, Kyoto, Japan, May 2, 2008.
- Toyohashi University of Technology, Toyohashi, Japan, April 24, 2008.
- National Institute for Materials Science, Tsukuba, Japan, February 22, 2008.
- WPI-AIMR Research Workshop, Tohoku University, Sendai, Japan, February 18, 2008.
- Defense Metallurgical Research Laboratory, Hyderabad, India, December 13, 2007.
- ASM International, India Chapter and Indian Institute of Metals Bombay Chapter, December 11, 2007.
- Warsaw Technical University, Warsaw, Poland, June 26, 2007.
- Polish Academy of Sciences, Krakow, Poland, June 25, 2007.
- Advanced Research Center (ARCI), Hyderabad, India, May 29, 2007.
- Helmut Schmidt University, Hamburg, Germany, August 17, 2006.
- GKSS Research Center, Geesthacht, Germany, June 6, 2005.
- Tata Research, Development, and Design Center, Pune, India, December 20, 2004.
- National Institute of Technology, Jaipur, India, December 16, 2004.
- GKSS Research Center, Geesthacht, Germany, July 22, 2004.
- University of Barcelona, Bellaterra, Spain, July 16, 2004.
- Hanyang University, Ansan, South Korea, November 28, 2003.
- Kongju National University, Kongju, South Korea, November 27, 2003.
- Chonbuk National University, Chonju, South Korea, March 19, 2003.
- Hanbat National University, Daejeon, South Korea, March 19, 2003.
- International Advanced Research Center for Powder Metallurgy and New Materials, Hyderabad, India, December 17, 2002.
- Hanyang University, Ansan, South Korea, May 16, 2002
- Research Institute of Industrial Science and Technology (RIST), Pohang City, South Korea, May 13, 2002.
- Gyeong-Sang National University, Jinju City, South Korea, May 10, 2002.
- ASM San Fernando Valley Chapter, Los Angeles, CA, April 26, 2001.
- GKSS Research Center, Geesthacht, Germany, August 16, 2001.
- Korea Advanced Institute of Science and Technology, Daejeon, South Korea, May 14, 2001.
- Colorado School of Mines, November 12, 1998.
- Korea Institute of Science and Technology, September 22, 1998.
- Colorado School of Mines, March 12, 1998.
- Banaras Hindu University, Varanasi, India, December 6, 1996.
- Inland Empire (Spokane) Chapter of ASM International, September 13, 1994.
- University of Idaho, Moscow, ID, February 10, 1994.
- Washington State University, Pullman, WA, November 2, 1993.

- Nihon University, Tokyo, Japan, August 30, 1993.
- Nagoya University, Nagoya, Japan, August 20, 1993.
- Osaka University, Osaka, Japan, August 19, 1993.
- Kobe Steel Co., Kobe, Japan, August 18, 1993.
- NEC Research Laboratories, Tokyo, Japan, August 17, 1993.
- University of Idaho, Moscow, ID, February 1, 1993.
- Indian Institute of Science, Bangalore, India, August 23, 1992.
- Indian Institute of Metals, Bombay Chapter, Bombay, India, August 21, 1992.
- Banaras Hindu University, Varanasi, India, August 19, 1992.
- Washington State University, Pullman, WA, April 23, 1992.
- University of Idaho, Moscow, ID, March 8, 1991.
- University of Dayton, Dayton, OH January 11, 1990.
- Wright-Patterson Air Force Base, Dayton, OH, September 13, 1988.
- University of Oxford, Oxford, UK, December 4, 1986.
- University of Cambridge, Cambridge, UK, November 19, 1986.
- University of Sheffield, Sheffield, UK, October 30, 1986.
- National Physical Laboratory, New Delhi, October 20, 1986.
- Bangladesh University of Engineering & Technology, Dhaka, Bangladesh, October 21, 1984.
- Bangladesh Atomic Energy Commission, Dhaka, Bangladesh, October 20, 1984.
- Tohoku University, Sendai, Japan, October 8, 1984.
- Tokyo University, Tokyo, Japan, September 27, 1984.
- Kyoto University, Kyoto, Japan, September 21, 1984.
- Osaka University, Osaka, Japan, September 19, 1984.
- Sumitomo Light Metal Industry Ltd., Nagoya, Japan, September 18, 2004.
- Japan Institute of Light Metals, Nagoya, Japan, September 17, 1984.
- Defence Metallurgical Research Laboratory, Hyderabad, India, July 31, 1982.
- Indian Physics Association Tirupati, India, June 29, 1982.
- Corporate Research & Development Division, Bharat Heavy Electricals Ltd., Hyderabad, June 21, 1982.
- Reactor Research Center, Kalpakkam, India, December 27, 1980.
- Reactor Research Center, Kalpakkam, India, December 26, 1980.
- Indian Institute of Technology, Madras, Department of Metallurgy, December 23, 1980.
- Indian Institute of Technology, Madras, Department of Physics, December 23, 1980.
- Banaras Hindu University, Varanasi, India, September 20, 1980.
- Kawasaki Steel Co., Mizushima, Japan, May 26, 1980.
- Sumitomo Special Metals Co., Osaka, Japan, May 24, 1980.
- Kyoto University, Kyoto, Japan, October 20, 1979.
- Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany, December 5, 1973.
- University of Erlangen, Erlangen-Nürnberg, Germany, December 4, 1973.
- Catholic University, Leuven, Belgium, November 23, 1973.
- Atomic Energy Research Center, Mol, Belgium, November 21, 1973.
- Atomic Energy Research Center, Mol, Belgium, November 7, 1973.
- University of Sussex, Brighton, UK, May 15, 1973.

#### NATIONAL/INTERNATIONAL CONFERENCES ORGANIZED:

- International Symposium on Manufacturing, Properties, and Applications of Nanocrystalline Materials, Columbus, OH, October 18-21, 2004
- Processing and Properties of Structural Nanomaterials, Chicago, IL, November 9-12, 2003.
- Surface Engineering in Materials Science II, San Diego, CA, March 2-6, 2003.
- THERMEC 2000 (International Conference on Processing and Manufacturing of Advanced Materials), Las Vegas, NV, December 4-8, 2000.
- Ultrafine Grained Materials, Nashville, TN, March 12-16, 2000.
- Recent Advances in Powder Consolidation, Rosemont, IL, October 14-15, 1998.
- Processing and Properties of Nanocrystalline Materials, Cleveland, OH, October 29-November 2, 1995.
- Synthesis/Processing of Lightweight Metallic Materials, Las Vegas, NV, February 13-16, 1995.
- Seminar on Transmission Electron Microscopy in Phase Transformations, Varanasi, March 1985.
- Workshop on Electron Microscopy, Varanasi, March 1985.
- Light Metals: Science and Technology, Varanasi, India, November 14-16, 1983.
- XV Annual Conference of the Electron Microscope Society of India, December 1982.
- Regional Workshop on Non-Destructive Examination, Varanasi, December 1981.
- National Workshop on Metallic Glasses: Science and Technology (DST), Varanasi, October 1980.
- Seminar on Transmission Electron Microscopy in Phase Transformations, Varanasi, March 1978.
- Third Short Course on Field Emission and Ion Microscopy (ISTE), Varanasi, March 1972.

In addition to the above, actively involved in the Organizing Committees of the following international conferences:

- The 6th International Conference on Advanced Materials and Processing (ICAMP 6), Lijiang, Yunnan, P.R. China, July 19-23, 2010.
- International Conference on Synthesis, Characterization, Consolidation and Modelling of Nanomaterials, Coimbatore, India, March 5-6, 2010.
- International Conference on Frontiers of Metallurgy and Materials Technology, Hyderabad, India, January 29-31, 2009.
- International Conference on Metals and Alloys: Past, Present and Future, Indian Institute of Technology, Kanpur, December 7-10, 2007.
- THERMEC 2003 (International Conference on Processing and Manufacture of Advanced Materials), Madrid, Spain, July 7-11, 2003.
- International Conference on Trends in Mechanical Alloying: Science, Technology, and Applications, Jaipur, India, February 21-23, 2001.

- International Conference on Metallurgical Technologies, Varanasi, India, December 9-12, 1998.
- Second International Conference on Structural Applications of Mechanical Alloying, Vancouver, BC, Canada, September 20-22, 1993.
- First International Conference on Structural Applications of Mechanical Alloying, Myrtle Beach, SC, March 27-29, 1990.
- XVII Annual Meeting of the Electron Microscope Society of India, Chandigarh, January-February 1986.
- 37<sup>th</sup> Annual Technical Meeting of the Indian Institute of Metals, Varanasi, November 1983.
- Seminar on “High Resolution and Analytical Microscopy”, Kalpakkam, India, February 1982.
- Tenth National Conference on Crystallography, Varanasi, February 1979.
- International Conference on Metal Sciences – The Emerging Frontiers, Varanasi, November 1977.
- Summer School in Advanced Metallography, Varanasi, June-July 1971.

#### **PROFESSIONAL SERVICE:**

- Refereed research proposals for the
  - National Science Foundation (also panelist),
  - Department of Energy,
  - Department of Defense,
  - Army Research Office,
  - American Chemical Society,
  - NSF Program on Women’s International Science Collaboration (WISC),
  - University of California Energy Institute, and others.

#### **Committee Activities (outside UCF):**

2012 – 2014	.....	Alternate CECS Senator, UCF Faculty Council
2012	.....	Reviewer for proposals submitted to Romanian Research Council
2011	.....	Member of the International Panel to evaluate continuation of the national proposal on “High Performance Bulk Nanocrystalline Materials: Physics of Synthesis and Properties” for Fonds zur Förderung der Wissenschaftlichen Forschung (FWF), Austrian Research Foundation, Vienna
2010	.....	Member, Apex Committee, International Winter School on Advances in Aeronautical Materials and Technologies, Hyderabad, India, December 15-19, 2010



- 2009 ..... Member, International Advisory Committee, International Conference on Synthesis, Characterization, Consolidation and Modeling of Nanomaterials, Coimbatore, India, March 5-6, 2010.
- 2009 ..... Member, Core Committee, International Conference on “Frontiers of Metallurgy and Materials Technology”, Hyderabad, India, January 29-31, 2009
- 2008 – to-date ..... Member, ASM-TMS Joint Commission on Metallurgical and Materials Transactions
- 2008 ..... Reviewer of Proposals, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia
- 2007 ..... Member of the International Panel to evaluate a national proposal on “High Performance Bulk Nanocrystalline Materials: Physics of Synthesis and Properties” for Fonds zur Förderung der Wissenschaftlichen Forschung (FWF), Austrian Research Foundation, Vienna
- 2007 ..... Member, ASM International Awards Committee
- 2006 – 2009 ..... Member, ASM International NPS Committee
- 2003 – 2004 ..... Member, Strategic Council on Membership and Services Expansion of ASM International
- 2003 – 2004 ..... Member, Organizing Committee of ASM Materials Solutions Conference and Show, Columbus, OH, October 18-21, 2004.
- 2003 – to-date ..... Chairman, Nanomaterials Task Force of ASM International
- 2003 – 2005 ..... Vice Chairman, TMS Powder Materials Committee
- 2001 – 2003 ..... Secretary, TMS Powder Materials Committee
- 1999 – 2001 ..... Chairman, ASM International Materials Synthesis and Processing Committee
- 1998 – to-date ..... Member, TMS Powder Materials Committee
- 1990 – to-date ..... Member, ASM International Materials Synthesis and Processing Committee
- 1989- to date ..... Member, TMS Titanium Committee
- 1987 – 88 ..... Chairman, Varanasi Chapter of the Indian Institute of Metals
- 1987 – 88 ..... Chairman, Banaras Hindu University Publications Board
- 1986 – 88 ..... Member, Executive Committee of the Electron Microscope Society of India.
- 1986 – 88 ..... Member, Banaras Hindu University Residential Accommodation Allotment Committee
- 1986 – 88 ..... Alternate Member, Metallography and Heat Treatment Sectional Committee, SMDC-27 of Bureau of Indian Standards, New Delhi.
- 1980 – 81 ..... Member, BHU-Institute of Technology Publications Committee
- 1981 – 84 ..... Chairman, BHU-Institute of Technology Publications Committee
- 1981 – 83 ..... Secretary, Varanasi Chapter of the Indian Institute of Metals
- 1977 – 78 ..... Member, Executive Committee of the Indian Vacuum Society.

1971 – 73 ..... Treasurer, Varanasi Chapter of the Indian Institute of Metals

**MEMBERSHIP OF PROFESSIONAL SOCIETIES:**

- Fellow, ASM International
- Fellow, Institute of Materials, Minerals and Mining, London, UK
- Member, TMS
- Life Member, Materials Research Society of India
- Life Member, The Indian Institute of Metals
- Life Member, Electron Microscope Society of India
- Life Member, Indian Vacuum Society

## LIST OF PUBLICATIONS

### Books

1. C. Suryanarayana, "Rapidly Quenched Metals - A Bibliography 1973-1979", IFI/Plenum, New York, 1980, 278 pp.
2. T. R. Anantharaman and C. Suryanarayana, "Rapidly Solidified Metals: A Technological Overview", Trans Tech Publications, Aedermannsdorf, Switzerland, 1987, 260 pp.
3. C. Suryanarayana, "Bibliography on Mechanical Alloying and Milling", Cambridge International Science Publishing, Cambridge, UK, 1995, 439 pp.
4. C. Suryanarayana and M. G. Norton, "X-Ray Diffraction: A Practical Approach\*", Plenum Press, New York, NY, 1998, 273 pp.  
**\*Translated into Korean language and published by Hong Reung Science Publishers in 2006.**
5. C. Suryanarayana (ed.), "Non-Equilibrium Processing of Materials", Pergamon Press, Oxford, UK, 1999, 438 pp.
6. C. Suryanarayana, "Mechanical Alloying and Milling", Marcel Dekker, Inc., New York, NY, 2004, 466 pp.
7. C. Suryanarayana, "Experimental Techniques in Mechanics and Materials", Wiley Custom Services, New York, NY, 2006, 388 pp.
8. C. Suryanarayana and A. Inoue, "Bulk Metallic Glasses", CRC Press & Taylor & Francis, Boca Raton, FL. 2011, 543 pp.
9. C. Suryanarayana, "Experimental Techniques in Materials and Mechanics", CRC Press & Taylor & Francis, Boca Raton, FL. 2011, 468 pp.

### Edited Conference Proceedings

1. R. Krishnan, P. Mukhopadhyay, and C. Suryanarayana (eds.), "Proceedings of the X Annual Conference of the Electron Microscope Society of India", 1978, 116 pp.
2. C. Suryanarayana (ed.), "Fifty Years of Electron Microscopy", Special Issue of the Bulletin of the Electron Microscope Society of India, 1981, 57 pp.
3. C. Suryanarayana (ed.), "Proceedings of the XV Annual Conference of the Electron Microscope Society of India, 1983 (Vol. 7 of the Bulletin of the Electron Microscope Society of India), 215 pp.
4. C. Suryanarayana, P. M. Prasad, S. L. Malhotra, and T. R. Anantharaman (eds.), "Light Metals: Science and Technology", Proceedings of an International Symposium, TransTech Publications, Aedermannsdorf, Switzerland, 1985, 271 pp.

5. F.H. Froes, C. Suryanarayana, and C.M. Ward-Close (eds.), "Synthesis/Processing of Lightweight Metallic Materials", TMS, Warrendale, PA, 1995, 368 pp.
6. C. Suryanarayana, J. Singh and F.H. Froes (eds.), "Processing and Properties of Nanocrystalline Materials", TMS, Warrendale, PA, 1996, 494 pp.
7. R.S. Mishra, S.L. Semiatin, C. Suryanarayana, N.N. Thadhani, and T.C. Lowe (eds.), "Ultrafine Grained Materials", TMS, Warrendale, PA, 2000, 434 pp.
8. T. Chandra, K. Higashi, C. Suryanarayana, and C. Tome (eds.), "Processing and Manufacturing of Advanced Materials (THERMEC 2000)", Elsevier, Oxford, UK, 2001 (on CD-ROM and keynote contributions as Vol. 117, No. 3, 2001 of the International Journal of Materials Processing Technology as a Special Issue).
9. S. Seal, N.B. Dahotre, J.J. Moore, C. Suryanarayana, and A. Agarwal (eds.), "Surface Engineering in Materials Science II", TMS, Warrendale, PA, 2003, 333 pp.
10. L. Shaw, C. Suryanarayana and R.S. Mishra (eds.), "Processing and Properties of Structural Nanomaterials", TMS, Warrendale, PA, 2003, 222 pp.
11. C. Suryanarayana, L.L. Shaw, and R.S. Mishra (eds.), "Nanomaterials", A special issue of the "Journal of Materials Engineering and Performance", ASM International, Vol. 14 (August 2005), pp. 415-472.
12. J.W. Burdon, C. Suryanarayana, and W.M. Mullins (eds.), "Nanomaterials", TMS, Warrendale, PA, 2005, 79 pp.

### **Book Chapters**

1. C. Suryanarayana, "Liquid-Quenched Metal-Metal Glasses"\*, in "Structure and Properties of Amorphous Metals II", eds. T. Masumoto and T. Imura, Suppl. Sci. Rep. Res. Inst. Tohoku Univ., A28 (1980) 143-154.  
**\*Listed in ASM Source Book on Rapidly Solidified Alloys**
2. C. Suryanarayana, "Electrical Properties and Applications (of Metallic Glasses)", in "Metallic Glasses: Production, Properties and Applications", ed., T. R. Anantharaman, Trans Tech Publications, Aedermannsdorf, Switzerland, 1984, pp. 249-267.
3. C. Suryanarayana, "Rapid Solidification", in "Materials Science and Technology - A Comprehensive Treatment", Vol. 15: Processing of Metals and Alloys, ed., R.W. Cahn, VCH Verlagsgesellschaft mbH, Weinheim, Germany, 1991, pp. 57-110.
4. F.H. Froes and C. Suryanarayana, "Aerospace Structural Materials for the Twenty-First Century", in "Materials Science and Engineering for Manufacturing", ed., L.E. Murr, Tech Books, Fairfax, VA, 1992, pp. 31-43.
5. C. Suryanarayana and F.H. Froes, "Non-Equilibrium Processing of Lightweight Aerospace Materials: Rapid Solidification and Mechanical Alloying", in "Materials Science and Engineering for Manufacturing", ed., L.E. Murr, Tech Books, Fairfax, VA, 1992, pp. 44-50.

6. C. Suryanarayana and F.H. Froes, "Mechanical, Chemical, and Electrical Applications of Rapidly Solidified Alloys", in "Rapidly Solidified Alloys : Processes, Structures, Properties, Applications", ed., H.H. Liebermann, Marcel Dekker, Inc., New York, 1993, pp. 737- 754.
7. F.H. Froes, C. Suryanarayana, and I.S. Polkin, "Advanced Aerospace Materials - Titanium Aluminide Intermetallic Compounds and Metal Matrix Composites", in "Advanced Topics in Materials Science and Engineering", eds., J.L. Moran-Lopez and J.M. Sanchez, Plenum Press, New York, 1993, pp. 23-46.
8. C. Suryanarayana, "Nanocrystalline Materials", in "High Temperature High Performance Materials for Rocket Engines and Space Applications", ed. K. Upadhya, TMS, Warrendale, PA, 1995, pp. 61-119.
9. F.H. Froes and C. Suryanarayana, "Titanium Aluminides", in "Physical Metallurgy and Processing of Intermetallic Compounds", eds., N.S. Stoloff and V.K. Sikka, Chapman & Hall, New York, NY, 1996, pp. 297-350.
10. C. Suryanarayana, "Mechanical Alloying", in "ASM Handbook", vol. 7 (Powder Metal Technologies and Applications), ASM International, Materials Park, OH, 1998, pp. 80-90.
11. C. Suryanarayana, "Mechanical Alloying", in "Non-Equilibrium Processing of Materials", ed. C. Suryanarayana, Elsevier Science Pub., Oxford, UK, 1999, pp. 49-87.
12. C. Suryanarayana and C.C. Koch, "Nanostructured Materials", in "Non-Equilibrium Processing of Materials", ed. C. Suryanarayana, Elsevier Science Pub., Oxford, UK, 1999, pp. 313-346.
13. C.C. Koch and C. Suryanarayana, "Nanocrystalline Materials", in "Microstructure and Properties of Materials", ed. J.C.M. Li, World Scientific Publishing Corp., Singapore, vol. 2, Chapter 6, 2000, pp. 359-403.
14. C. Suryanarayana, "Nanostructured Intermetallics", in "Intermetallic Compounds: Principles and Practice", Vol. 3, Progress, eds. J.H. Westbrook and R.L. Fleischer, John Wiley & Sons Ltd., Chichester, UK, 2002, pp. 749-764.
15. C. Suryanarayana, "Rapid Solidification Processing", in "Encyclopedia of Materials: Science and Technology – Updates", eds. K.H.J. Buschow, R.W. Cahn, M.C. Flemings, E.J. Kramer, and S. Mahajan, Pergamon Press, Oxford, UK, 2002, 1-10.
16. C. Suryanarayana and B. Prabhu, "Synthesis of Nanostructured Materials by Inert-Gas Condensation Methods", in "Nanostructured Materials: Processing, Properties, and Applications", Second Edition, Carl C. Koch (ed.), William Andrew, Inc., Norwich, NY, 2007, pp. 47-90.
17. A. P. Newbery, C. Suryanarayana, J.A. Christodoulou, B.Q. Han, and E.J. Lavernia, "Mechanical Alloying and Severe Plastic Deformation", in "CRC Materials Processing Handbook", J.R. Groza, J.F. Shackelford, E.J. Lavernia, and M.T. Powers (eds.), CRC Press LLC, Boca Raton, FL, 2007, pp. 13-1 to 13-28.
18. C. Suryanarayana and A. Inoue, "Metallic Glasses", in "Ullmann's Encyclopedia of Industrial Chemistry", VCH Wiley, 2012. DOI: 10.1002/14356007.a16\_335.pub2

19. C. Suryanarayana and E. Ivanov, "Mechanochemical Synthesis of Nanocrystalline Metal Powders in "Advances in Powder Metallurgy", edited by I.T. Chang and Y. Zhao, Woodhead Publishing Ltd., Oxford, UK (2013), pp. 42-68. DOI: 10.1533/9780857098900.1.42.

### **Research and Review Papers**

1. C. Suryanarayana and T. R. Anantharaman, "Metallography of Rapid Solidification", Trans. Indian Inst. Metals, **21**, No.3 (1968) 67.
2. C. Suryanarayana and T. R. Anantharaman, "Formation of an Intermediate Phase in the Aluminium-Germanium System", Current Sci., **37** (1968) 631-633.
3. C. Suryanarayana and T. R. Anantharaman, "Impact of Quenching from Melt on Equiatomic Aluminium-Germanium Alloy", Current Sci., **39** (1970) 123-125.
4. C. Suryanarayana and T. R. Anantharaman, "Solidification of Aluminium-Germanium Alloys at High Cooling Rates", J. Mater. Sci., **5** (1970) 992-1004.
5. S. Srinivasa Rao, C. Suryanarayana, and T. R. Anantharaman, "Metallographic & X-Ray Studies of Phase Transformations in  $\alpha$ - $\beta$  Brasses", Indian J. Technol., **9** (1971) 11-18.
6. H. P. Singh, C. Suryanarayana, S. Misra, and T. R. Anantharaman, "Energetics of the Non-Equilibrium Phases in the System Lead-Bismuth", Z. Metallkde., **62** (1971) 52-55.
7. C. Suryanarayana and T. R. Anantharaman, "Metallography of Rapidly Solidified Aluminium-Germanium Alloys", Metallography, **4** (1971) 79-82.
8. P. Ramachandrarao, C. Suryanarayana, and T. R. Anantharaman, "On the Origin of Metastable Intermediate Phases in Splat-Cooled Binary Alloys", Metall. Trans., **2** (1971) 617-619.
9. C. Suryanarayana, "Constitution, Structure and Energetics of Splat-Cooled Alloys", Scripta Metall., **5** (1971) 337-340.
10. T. R. Anantharaman and C. Suryanarayana, "Review: A Decade of Quenching from the Melt", J. Mater. Sci., **6** (1971) 1111-1135.
11. C. Suryanarayana and T. R. Anantharaman, "Formation of Hexagonal Phases in  $\alpha$ - $\beta$  Brasses", Metall. Trans., **2** (1971) 3237.
12. C. Suryanarayana, "Metallography of Aluminium-Germanium Alloys Quenched from the Melt", Trans. Indian Inst. Metals, **25**, No. 1 (1972) 36-42.
13. T. R. Anantharaman and C. Suryanarayana, "Reply to 'A Comment on 'A Decade of Quenching from the Melt'", J. Mater. Sci., **7** (1972) 351-353.
14. C. Suryanarayana and T. R. Anantharaman, "On the Structure of a Metastable Phase in the Lead-Bismuth System", Solid State Commun., **12** (1973) 87-88.

15. H. Jones and C. Suryanarayana, "Rapid Quenching from the Melt: An Annotated Bibliography 1958-72", J. Mater. Sci., **8** (1973) 705-753.
16. C. Suryanarayana, "Constitution of Liquisolid-Quenched Al-W Alloys", J. Mater. Sci., **8** (1973) 760-761.
17. C. Suryanarayana, "Lattice Parameters of Liquisolid-Quenched Aluminium", Phys. Stat. Sol., (a) **18** (1973) K135-K137.
18. Satish Misra, C. Suryanarayana, and S. Ranganathan, "Structure of High-Angle Grain Boundaries in HCP Metals", Indian J. Technol., **11** (1973) 435-438.
19. C. Suryanarayana and T. R. Anantharaman, "Metastable Phases in the Aluminium-Germanium System", Z. Metallkde., **64** (1973) 800-804.
20. C. Suryanarayana and T. R. Anantharaman, "On the Crystal Structure of a Non-Equilibrium Phase in the Gold-Silicon System", Mater. Sci. & Eng., **13** (1974) 73-81.
21. W. A. T. Clark, D. A. Smith, and C. Suryanarayana, "The Dislocation Structure of High-Angle Grain Boundaries in Tungsten, Molybdenum and Gold", Canadian Met. Quart., **13** (1974) 49-58.
22. C. Suryanarayana, "A New Metastable Phase in the Silver-Silicon System", J. Less-Common Metals, **35** (1974) 347-352.
23. G. Van Tendeloo, N. S. Mishra, and C. Suryanarayana, "Electron Microscopy and Electron Diffraction Study of Ordering in Ni<sub>4</sub>W", J. Mater. Sci., **11** (1976) 1175-1178.
24. C. Suryanarayana, "The Stacking-Fault Energy of Graphite", Trans. Indian Inst. Metals, **29** (1976) 352-354.
25. T. R. Anantharaman, P. Ramachandrarao, C. Suryanarayana, S. Lele, and K. Chattopadhyay, "Structure and Constitution of Rapidly Solidified Aluminium Alloys. I. General Assessment", Trans. Indian Inst. Metals, **30** (1977) 423-433.
26. T. R. Anantharaman, P. Ramachandrarao, C. Suryanarayana, S. Lele, and K. Chattopadhyay, "Structure and Constitution of Rapidly Solidified Aluminium Alloys. II. Annotated Bibliography", Trans. Indian Inst. Metals, **30** (1977) 434-448.
27. A. Ranga Rao and C. Suryanarayana, "Solute-Vacancy Binding Energies in Magnesium Alloys" Phys. Stat. Sol., (a) **45** (1978) K131-K133.
28. C. Suryanarayana, S. K. Tiwari, and T. R. Anantharaman, "A New Metastable Phase in the Aluminium-Magnesium System", Z. Metallkde., **69** (1978) 155-156.
29. C. Suryanarayana and R. C. Gupta, "Rapid Solidification", J. Inst. Engrs. (Hindi), **59**, No. 8 (1978) 16-20.
30. G. V. S. Sastry, C. Suryanarayana, M. Van Sande, and G. Van Tendeloo, "A New Ordered Phase in the Al-Pd System", Mater. Res. Bull., **13** (1978) 1065-1070

31. G. V. S. Sastry, C. Suryanarayana, O. N. Srivastava, and H. A. Davies, "Crystallization of an Amorphous Al-Pd Alloy", Trans. Indian Inst. Metals, **31** (1978) 292-294.
32. G. V. S. Sastry and C. Suryanarayana, "An Electron Diffraction Study of a Metastable Al<sub>2</sub>Pd Phase", J. Less-Common Metals, **63** (1979) P89-P91.
33. S. K. Tiwari, K. Chattopadhyay, C. Suryanarayana, and T. R. Anantharaman, "Decomposition Studies of a Liquisolid-Quenched Al-33 at.% Mg Alloy", Metallography, **12** (1979) 73-86.
34. A. K. Singh, C. Suryanarayana, and O. N. Srivastava, "Electron Microscopic Studies of Phase Transformations in NiSe Thin Films", Phys. Stat. Sol., (a) **54** (1979) K103-K105.
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36. A. Inoue, C. Suryanarayana, T. Masumoto, and A. Hoshi, "Superconductivity of Ti-Nb-Si Alloys Crystallized from the Amorphous State", Sci. Rep. Res. Inst. Tohoku Univ., **A28** (1980) 182-194.
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39. C. Suryanarayana, A. Inoue, and T. Masumoto, "Transformation Studies and Mechanical Properties of Melt-Quenched Amorphous Titanium-Silicon Alloys", J. Mater. Sci., **15** (1980) 1993-2000.
40. C. Suryanarayana, A. Inoue, and T. Masumoto, "New Superconductors with Metastable Ordered Structures", Scripta Metall., **14** (1980) 881-885.
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42. A. Inoue, H. M. Kimura, T. Masumoto, C. Suryanarayana, and A. Hoshi, "Superconductivity of Ductile Ti-Nb-Si Amorphous Alloys", J. Appl. Phys., **51** (1980) 5475-5482.
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