

# Subith S. Vasu

## CONTACT

Assistant Professor

Mechanical and Aerospace Engineering Department

University of Central Florida, 4000 Central Florida Blvd, Orlando, FL, 32816

Office: Bldg 40, Room 216, 407-823-3468, Subith@ucf.edu

## EDUCATION

- Stanford University, Mechanical Engineering, Ph.D. (2010)
- Indian Institute of Technology (IIT Madras), Aerospace Engineering, M. Tech. (2004)
- Indian Institute of Technology (IIT Madras), Aerospace Engineering, B. Tech. (2004)

## APPOINTMENTS

- 2012–present: Assist. Professor, Mechanical and Aerospace Engg., Univ. of Central Florida, FL
- 12/2010-12/2011: Postdoc, Sandia National Laboratories, Livermore, CA
- 9/2010-11/2010: Postdoc, Mechanical Engineering Department, Stanford University, CA
- 12/2009-12/2010: Biofuel Technical Consultant, Cobalt Technologies, Mountain View, CA
- 6/2010-9/2010: Academic Consultant, English for Foreign Students, Stanford Univ., CA
- 6/2004-9/2010: Graduate Research Assistant, High Temperature Gas Dynamics Lab, Mechanical Engineering Department, Stanford University, CA
- 1/2007-6/2007: Cofounder & CTO, Micro-Power Solutions, Palo Alto, CA
- 4/2002-8/2003: Research Intern, Space Propulsion Lab, Politecnico di Milano, Italy
- 12/2000-5/2004: Research Assistant, Gas Dynamics and Propulsion Lab, IIT Madras, India

## CURRENT RESEARCH AREAS

- Rocket propulsion; Hypergolic propellants; Hybrid propulsion; Energetic nanomaterials; Scramjets & high-speed air breathing vehicles propulsion; Impulse facilities for hypersonics;
- Reaction rate experiments using shock tube and laser diagnostics; Synchrotron photo-ionization mass spectrometry probing surface, atmospheric, and propellant chemistry; Chemical kinetic modeling of reactive flows;
- Optical diagnostics development; Optical diagnostics applications in energy, propulsion, and environmental science; Fundamental & applied Laser spectroscopy;
- Shock tube gas dynamics and chemistry; Nonlinear wave propagation in gases;
- Surface catalytic processes for heterogeneous ignition, ablation and fuel conditioning;
- Advanced engines, gas turbines; Alternative and fossil fuels;

## SERVICES AND AFFILIATION

- **Professional Member:** AIAA, ACS, Combustion Institute, SAE
- **Reviewer for:**
  - *Journal of Aeronautics & Aerospace Engineering*
  - *Shock Waves*
  - *Journal of Propulsion and Power*
  - *Combustion and Flame*
  - *Combustion Science & Technology*

- *Current Organic Chemistry*
- *Fuel Processing Technology*
- *Recent Patents on Mechanical Engineering*
- *6<sup>th</sup> International Conference on Computational Fluid Dynamics*
- *Journal of Petroleum Technology and Alternative Fuels*
- *Energy & Fuels*
- *Fuel*
- *Journal of Physical Chemistry A*
- *ASME Turbo Expo 2013*
- **Proposal reviewer for:** NSF
- **Journal Editorial Board:**
  - *Journal of Aeronautics & Aerospace Engineering*
  - *Open Journal of Physical Chemistry*
  - *The Open Petroleum Engineering Journal*
  - *The Open Physical Chemistry Journal*
  - *Journal of Quantum Chemistry*
  - *Researches and Applications in Mechanical Engineering*
- **Conference Session Chair:** 7<sup>th</sup> U.S. Combustion Meeting, Atlanta, March 20-23, 2011
- **Conference Organizing Committee:**
  - 9<sup>th</sup> International Workshop on Combust. & Propulsion- *Novel energetic materials and applications*, Lerici, Italy, 2003
  - 10<sup>th</sup> International Workshop on Combust. & Propulsion- *In-Space Propulsion*, Italy, 2003
- **Academic Services at University of Central Florida:**
  - Mechanical and Aerospace Engineering Graduate Curriculum Committee (2012-present)
  - MAE Department web page project leader (2013-present)
  - Career advising and counseling to Mechanical Engineering Undergraduates (total=40 students since 2012)
  - Career advising and counseling to Aerospace Engineering Undergraduates (total=41 students since 2012)
  - Mechanical and Aerospace Engineering Senior Design Team Adviser (total teams=4)
  - Mechanical Engineering Ph.D. Quas Committee: Fluids (SP 2012), Heat Transfer (F 2012), Thermo (SP 2013, F 2013- served as chair)
  - EML 5090 Mechanical and Aerospace Engineering Graduate Seminar (SP 2013, 62 students; F 2013, 61 students)- developed curriculum, founding instructor

**JOURNAL PAPERS** (*Total Citations 1/17/2013: ~320 Scopus; ~500 Google Scholar*)

22. Joshua W. Allen; Adam M. Scheer; Connie Gao; Shamel S. Merchant; **Subith S. Vasu**; Oliver Welz; John D. Savee; David L. Osborn; Changyoul Lee; Stijn Vranckx; Zhandong Wang; Fei Qi; Ravi X. Fernandes; William H. Green; Masood Z. Hadi; and Craig A. Taatjes; "A coordinated investigation of the combustion chemistry of diisopropyl ketone, a prototype for biofuels produced by endophytic fungi", **Combustion and Flame**, accepted, 10/13. <http://dx.doi.org/10.1016/j.combustflame.2013.10.019>.
21. Jihad Badra; Ahmed Elwardany; Fethi Khaled; **Subith S. Vasu**; Aamir Farooq; " A shock tube and laser absorption study of ignition delay times and OH reaction rates of ketones: 2-Butanone and 3-Buten-2-one", **Combustion and Flame**, accepted, 9/13. <http://dx.doi.org/10.1016/j.combustflame.2013.10.001>
20. **Subith S. Vasu**; S.M. Sarathy; "On the high-temperature combustion of n-butanol: Shock tube data and an improved kinetic model", **Energy & Fuels**, accepted, 9/13. <http://dx.doi.org/10.1021/ef401406z>

19. Welz O.; Savee J. D.; Osborn D.; **Vasu S. S.**; Percival C. J.; Shallcross D. E.; Taatjes C. A.; "Direct kinetic measurements of Criegee Intermediate ( $\text{CH}_2\text{OO}$ ) formed by Reaction of  $\text{CH}_2\text{I}$  with  $\text{O}_2$ ", **Science** 2012, 335, 204-207.
18. **Vasu S. S.**; Davidson D. F.; Hanson R. K.; "Shock tube study of syngas ignition in rich  $\text{CO}_2$  mixtures and determination of the rate of  $\text{H}+\text{O}_2+\text{CO}_2\rightarrow\text{HO}_2+\text{CO}_2$ ", **Energy and Fuels** 2011, 25 (3), 990-997.
17. **Vasu S. S.**; Huynh L.K.; Davidson D. F.; Hanson R. K.; "Reactions of OH with Butene Isomers: Measurements of the Overall Rates and a Theoretical Study", **Journal of Physical Chemistry A** 2011, 115 (12), 2549-2556.
16. **Vasu S. S.**; Davidson D. F.; Hanson R. K.; "Shock tube experiments and kinetic modeling of toluene ignition", **Journal of Propulsion and Power** 2010, 26 (4), 776-783.
15. Hong Z.; **Vasu S. S.**; Davidson D. F.; Hanson R. K.; "Experimental study of the rate of  $\text{OH}+\text{HO}_2=\text{H}_2\text{O}+\text{O}_2$  at high temperatures using the reverse reaction", **Journal of Physical Chemistry A** 2010, 114 (17), 5520-5525.
14. **Vasu S. S.**; Zádor J., Davidson D. F.; Hanson R. K.; Golden D. M.; Miller J. A.; "High-temperature Measurements and a Theoretical Study of the Reaction of OH with 1,3-Butadiene", **Journal of Physical Chemistry A** 2010, 114, 8312-8318.
13. **Vasu S. S.**; Davidson D. F.; Hanson R. K.; Golden D. M.; "Measurements of the reaction of OH with n-butanol at high temperatures", **Chemical Physical Letters** 2010, 497, 26-29.
12. **Vasu S. S.**; Hong Z.; Davidson D. F.; Hanson R. K.; Golden D. M.; "Shock tube/laser absorption measurements of the reaction rates of OH with ethylene and propene", **Journal of Physical Chemistry A** 2010, 114, 11529-11537.
11. **Vasu S. S.**; Davidson D. F.; Hanson R. K.; "OH time-histories during oxidation of n-heptane and methycyclohexane at high-pressures and temperatures", **Combustion and Flame** 2009, 156, 736-749. **Selected as Cover Feature Article title.**
10. **Vasu S. S.**; Davidson D. F.; Hong Z.; Vasudevan V.; Hanson R. K.; "n-Dodecane oxidation at high pressures: Measurements of ignition delay times and OH concentration time histories", **Proceedings of the Combustion Institute** 2009, 32, 173-180.
9. **Vasu S. S.**; Davidson D. F.; Hong Z.; Hanson R. K.; "A shock tube study of methylcyclohexane ignition over a wide range of pressure and temperature", **Energy and Fuels** 2009, 23, 175-185.
8. Hong Z.; Pang G. A.; **Vasu S. S.**; Davidson D. F.; Hanson R. K.; "The use of driver inserts to reduce facility effects behind reflected shock waves", **Shock Waves** 2009, 19, 113-123.
7. Z. Hong; D. F. Davidson; **Vasu S. S.**; R. K. Hanson; "The effect of oxygenates on soot formation in rich heptane mixtures: A shock tube study", **Fuel** 2009, 88 (10), 1901-1906.
6. **Vasu S. S.**; Davidson D. F.; Hanson R. K.; "Jet fuel ignition delay times: Shock tube experiments over wide conditions", **Combustion and Flame** 2008, 152, 125-143.
5. Tyagi M.; Sujith R. I.; **Vasu S. S.**; "Nonlinear distortion of traveling waves in non-uniform gasdynamic flows", **International Journal of Aeroacoustics** 2008, 7 (Nos. 3&4), 243-266.

#### Journal papers in preparation (1/14)

4. K. Thurmond; E. Duenas; **S.S. Vasu**; W.P. Partridge Jr.; "LED-based sensors for simultaneous measurements of CO and  $\text{CO}_2$  from combustion and rocket exhausts".
3. A.C. Terracciano; N. Orlovskaya; **S.S. Vasu**; "A Porous Combustor for the Efficient Conversion of Thermal Energy from Liquid and Gaseous Fuels".
2. G. Barari; B. Koroglu; **S.S. Vasu**; J. E Dec; C. A Taatjes; "HCCI engine modeling of bioketone experiments".
1. C. A. Amy; B. Almansour; **S. S. Vasu**; L. Glebov; "A multi-purpose facility for high-pressure ignition studies of fuels relevant to combustion and propulsion".

## CONFERENCE PRESENTATIONS/PROCEEDINGS

30. A.C. Terracciano, B. Hughes, N. Orlovskaya, **S.S. Vasu**, "Numerical study of heterogeneous H-O-C-N-S syngas combustion system with a porous ceramic media", to be presented at Materials Challenges In Alternative & Renewable Energy 2014, Clearwater, FL.
29. G. Barari, B. Koroglu, **S.S. Vasu**, J. E Dec, C. A Taatjes, "HCCI engine modeling of diisopropyl ketone, a prototypical biofuel", Accepted for presentation at the ESS/CI Fall Technical meeting, Clemson, SC, 10/2013.
28. K. Thurmond, E. Duenas, **S.S. Vasu**, W.P. Partridge Jr., "Development of a LED-based sensor for simultaneous measurements of CO and CO<sub>2</sub> from combustion exhausts", Accepted for presentation at the ESS/CI Fall Technical meeting, Clemson, SC, 10/2013.
27. **S.S. Vasu**, S. M. Sarathy, "A kinetic model for the high-temperature oxidation of n-butanol based on recent shock tube/laser absorption experiments", Accepted for presentation at the ESS/CI Fall Technical meeting, Clemson, SC, 10/2013.
26. A.C. Terracciano, N. Orlovskaya, **S.S. Vasu**, "Development of a Porous Combustor for the Efficient Extraction of Thermal Energy from Liquid and Gaseous Fuels", Accepted for presentation at the ESS/CI Fall Technical meeting, Clemson, SC, 10/2013.
25. Jihad Badra, Ahmed Elwardany, Fethi Khaled, **Subith S. Vasu**, Aamir Farooq, "Measurements of the reaction rates of OH with ketones at high temperature", Accepted for presentation at the ESS/CI Fall Technical meeting, Clemson, SC, 10/2013.
24. K. Thurmond, E. Duenas, **S.S. Vasu**, W.P. Partridge Jr., "LED-based sensor for simultaneous measurements of CO and CO<sub>2</sub> from combustion exhausts", Poster at the Gordon Research Conference-Laser Diagnostics in Combustion, Waterville Valley, NH, 8/2013.
23. **S.S. Vasu**, S. M. Sarathy, "Improved Kinetic Mechanism for High-Temperature Decomposition of n-Butanol", Poster at the 8<sup>th</sup> U. S. National Combustion Meeting, Utah, 5/2013.
22. L. Glebov, A. Rysanyanskiy, V. Smirnov, L. Glebova, O. Mokhun, A. Glebov, J. Lumeau, Subith **Vasu**, and M.J. Soileau, "Rare earth ions doped PTR glass DBR and DFB lasers for combustion ignition", Optics and Photonics International Congress, 1<sup>st</sup> Laser Ignition Conference, Paper LIC3-4, Yokohama, Japan, 4/2013.
21. Allen J.W., Gao C.W., **Vasu S.S.**, Scheer A.M., Vrancx S., Fernandes R.X., Green W.H., Taatjes C. A., "Model generation and evaluation for the oxidation of ketones", AIChE 2012 - 2012 AIChE Annual Meeting, Conference Proceedings, Pittsburg, PA, 11/2012.
20. **Vasu S. S.**, "High-Temperature Decomposition Rates of Butanol Using OH Laser Absorption in a Shock Tube," Poster at the 34<sup>th</sup> International Symp. on Combustion, Warsaw, Poland, 8/ 2012.
19. A. M. Scheer, **Vasu S. S.**, O. Welz, H. Huang, J. D. Savee, D. L. Osborn, C. W. Gao, J. W. Allen, W. H. Green, C. A. Taatjes, "Investigating the Oxidation Chemistry of Ketones and Cyclic Ethers," Poster at the 22<sup>nd</sup> International Symposium on Gas Kinetics, Boulder, CO, 6/2012.
18. Allen, J. W., Gao, C. W., **Vasu S. S.**, Vrancx S., Fernandes R.X., W. H. Green, C. A. Taatjes, "A detailed kinetics model for the combustion of diisopropyl ketone," Poster at the 22<sup>nd</sup> International Symposium on Gas Kinetics, Boulder, CO, 6/2012.
17. O. Welz, J. Zador, J. D. Savee, L. Sheps, **Vasu S. S.**, S. J. Klippenstein, D. L. Osborn, C. A. Taatjes, "Low-temperature combustion chemistry of 1-Butanol: A synchrotron photoionization mass spectrometry and master-equation study," Poster at the 59<sup>th</sup> Annual Western Spectroscopy Association Conference, Pacific Grove, CA, 1/2012.
16. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, D. M. Golden, "High-Temperature Reactions of OH with Linear Alkenes up to C<sub>4</sub>," the 7<sup>th</sup> Int. Conference on Gas Kinetics, MIT, Cambridge, MA, 7/011.

15. **Vasu S. S.**, O. Welz, D. L. Osborn, C. A. Taatjes, "Synchrotron photoionization measurements of biofuel autoignition chemistry: Low-temperature oxidation of ketones," the 7<sup>th</sup> Int. Conference on Gas Kinetics, MIT, Cambridge, MA, 7/011.
14. **Vasu S. S.**, O. Welz, D. L. Osborn, C. A. Taatjes, "Synchrotron photoionization measurements of biofuel autoignition chemistry: Low-temperature oxidation of cyclopentanone and 2,4-dimethylpentan-3-one", 7<sup>th</sup> U.S. National Combustion Meeting, Atlanta, GA, 3/2011.
13. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, "Some aspects of toluene ignition: Experiments and modeling", 6<sup>th</sup> U.S. National Combustion Meeting, Ann Arbor, MI, Paper No. 12F1., 5/2009.
12. Z. Hong, D. F. Davidson, **Vasu S. S.**, R. K. Hanson, "Shock tube study of soot formation in rich heptane/oxygen mixtures with DME/acetone/butanal/3-pentanone additives," 32nd International Symposium on Combustion, Montréal, Canada, Poster # 1P25, 8/2008.
11. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, "OH time-history absorption measurements at high pressures and temperatures behind reflected shocks during methylcyclohexane oxidation," Proc. of the Western States Section of the Combustion Institute-Spring Meeting, Los Angeles, CA, Paper No. 08S-13, 3/2008.
10. **Vasu S. S.**, D. F. Davidson, R.K. Hanson, "Jet fuel ignition delay times and modeling: Studies at high pressure and low temperature in a shock tube," 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, Ohio, Paper No. AIAA-2007-5671, 7/2007.
9. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, "Jet fuel ignition delay times: shock tube experiments at high pressures," Proc. of the 21st Int. Colloquium on the Dynamics of Explosions and Reactive Systems, Poitiers, France, Paper No. 129, 7/2007.
8. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, "High-pressure shock tube experiments and modeling of n-dodecane/air ignition," Proc. of the 26th International Symposium on Shock Waves (ISSW 26), Göttingen, Germany, Paper No. 2730, 7/2007.
7. **Vasu S. S.**, N. N. Parikh, D. F. Davidson, R. K. Hanson, "Methylcyclohexane oxidation: shock tube experiments and modeling over a wide range of pressures and temperatures," Proc. of the 5<sup>th</sup> U.S. National Combustion Meeting, San Diego, CA, Paper No. D17, 3/2007.
6. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, "Shock tube ignition delay times and modeling of jet fuel mixtures," 42nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Sacramento, CA, Paper No. AIAA-2006-4402, 7/2006.
5. **Vasu S. S.**, D. F. Davidson, R. K. Hanson, "Shock tube measurements and modeling of ignition delay time in lean iso-octane/air," Proc. of the 25th International Symposium on Shock Waves (ISSW25), Bangalore, India, Paper No. 1168, 7/2005.
4. **Vasu S. S.**, M. Tyagi, R. Sujith, "Nonlinear wave propagation in Fanno line base flow," 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Paper No. AIAA-2005-520, 1/2005.
3. F. Maggi, L. T. DeLuca, A. Bandera, **Vasu S. S.**, A. Annovazzi, "Burning rate measurement on small-scale rocket motors," Proc. of the 4th International High Energy Materials Conference and Exhibit (HEMCE 2003), Pune, India, 11/2003.
2. L. T. DeLuca, F. Maggi, A. Bandera, A. Annovazzi, **Vasu S. S.**, "Manufacturing process effects on steady burning rate in a small-scale test motor," Proc. of the 10th International Workshop on Combustion and Propulsion (10th IWCP) - 'In-Space Propulsion', Lerici, LaSpezia, Italy, 9/2003.
1. A. Monferini, D. Maggiolini, **Vasu S. S.**, L. Galfetti, and L. T. DeLuca, "Effects of pressure and aluminum content on radiant emission from radial burning solid rocket propellants," Proc. of the 9th International Workshop on Combustion and Propulsion (9th IWCP) - 'Novel Energetic Materials and Applications', Lerici, LaSpezia, Italy, 9/2003.

## OTHER ARCHIVAL PUBLICATION

3. B. Sirjean, E. Dames, D. A. Sheen, X.-Q. You, C. Sung, A. T. Holley, F. N. Egolfopoulos, H. Wang, **S. Vasu**, D. F. Davidson, R. K. Hanson, H. Pitsch, C. T. Bowman, A. Kelley, C. K. Law, W. Tsang, N. P. Cernansky, D. L. Miller, A. Violi, R. P. Lindstedt, A high-temperature chemical kinetic model of n-alkane oxidation, JetSurF version 1.0, September 15, 2009 ([http://melchior.usc.edu/JetSurF/Version1\\_0/Index.html](http://melchior.usc.edu/JetSurF/Version1_0/Index.html)).
2. B. Sirjean, E. Dames, D. A. Sheen, X.-Q. You, C. Sung, A. T. Holley, F. N. Egolfopoulos, H. Wang, **S. Vasu**, D. F. Davidson, R. K. Hanson, H. Pitsch, C. T. Bowman, A. Kelley, C. K. Law, W. Tsang, N. P. Cernansky, D. L. Miller, A. Violi, R. P. Lindstedt, A high-temperature chemical kinetic model of n-alkane oxidation, JetSurF version 0.2, September 08, 2008, ([http://melchior.usc.edu/JetSurF/Version0\\_2/Index.html](http://melchior.usc.edu/JetSurF/Version0_2/Index.html)).
1. Craig. T. Bowman, David M. Golden, Ronald K. Hanson Heinz Pitsch, David F. Davidson, Adela Bardos, Rob Cook, Zekai Hong, Prahallad Iyengar, Shashank, **Subith S. Vasu**, Kevin Walters, Ripudaman Malhotra, "Optimization of Synthetic Oxygenated Fuels for Diesel Engines", Global Climate and Energy Project Technical Report, Stanford, CA, 2006. ([http://gcep.stanford.edu/pdfs/QeJ5maLQQuugiSYMF3ATDA/2.6.5.bowman\\_06.pdf](http://gcep.stanford.edu/pdfs/QeJ5maLQQuugiSYMF3ATDA/2.6.5.bowman_06.pdf))

## INVITED TALKS

16. IIT Bombay, 1/7/2014, "Experimental Techniques for Fundamental Combustion Studies of Alternative Fuels"
15. University of Southern California, 10/23/2013, "State-of-the-art Experiments to Solve Problems in Combustion, Propulsion, and Environmental Systems"
14. Oakridge National Lab, 8/5/2013, "LED-based absorption sensors for combustion exhaust measurements"
13. University of Central Florida, 7/19/2013, "Rocket 101-Introduction to the mechanism of rockets"
12. King Abdulla University of Science and Technology (KAUST), Saudi Arabia, 11/20/2012, "State-of-the-art Experiments Solve Problems in Energy and Atmosphere"
11. Politecnico di Milano (Polimi), Milano, Italy, 7/26/2012, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
10. UCF scholars day, Orlando, FL, 3/24/2012, "State-of-the-art Experiments to Solve Problems in Energy and Atmosphere"
9. Siemens Energy Inc., Orlando, FL, 3/15/2012, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
8. Sandia National Laboratories, Livermore, CA, 10/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
7. University of Texas at Dallas, TX, 10/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
6. University of Central Florida, Orlando, FL, 9/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
5. Lam Research Corporation, Fremont, CA, 8/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
4. Research and Technology Center-Air Liquide, Newark, DE, 7/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
3. Portland Technology Development Center-Intel, Hillsborough, OR, 4/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"
2. Sugarland Technology Center-Schlumberger, Sugarland, TX, 1/2010, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"



1. Westhollow Technology Center - Shell, Sugarland, TX, 11/2009, "Measurements and Modeling of Jet Fuel Ignition Times at Engine-relevant Pressure and Temperature Conditions"

#### **INVITED CONFERENCE & WORKSHOP PARTICIPATION**

- 4) *The 2<sup>nd</sup> Laser Ignition Conference 2014* to be held at Pacifico Yokohama, Yokohama, Japan, 22-25 April 2014.
- 3) *Indo-US workshop on Advanced Turbo-Machinery: Power Generation and Transportation for a Sustainable and Environmentally Responsible Future* to be held at Indian Institute of Technology Bombay, India, 6-7 Jan. 2014 (**also serving as an organizer**).
- 2) *Indo-US workshop on Flame Stabilisation and Combustion Instability* held at Indian Institute of Technology Madras, India, 6-8 August 2012.
- 1) *1<sup>st</sup> International RCM Workshop* held at Argonne National Lab in August 2012.

#### **TEACHING ACTIVITIES**

- **Courses Taught**

- EAS 4300 Aerospace Propulsion (SP 2013, 59 students)
- EML 6131 Combustion Phenomena (SP 2012, 12 students; F 2013, 25 students)
- EGN 3343H Thermodynamics Honors (F 2012, 20 students)
- EML 5090 Mechanical and Aerospace Engineering Graduate Seminar (SP 2013, 62 students; F 2013, 61 students)- **developed new course, founding instructor**
- EML 5937 Spectroscopy and Laser diagnostics for Engineers (SP 2014)- **developed new course**
- EML 4306C Energy Systems Lab (SP 2014)- **developed curriculum**

#### **STUDENTS ADVISED/CURRENTLY ADVISING**

##### **Current MS Thesis and Ph.D. Dissertation Students**

- 1) Batman Koroglu (Ph.D. Student, post quals)
- 2) Ghazal Barari (Ph.D. Student, post quals)
- 3) Luke Thompson (M.S. & Ph.D. Student)
- 4) Bader Almansour (Ph.D. student)
- 5) Kyle Thurmond (M.S. & Ph.D. Student), (Honors B.S.)- thesis defended on 11/26/13
- 6) Carlos Velez (Ph.D. Student, post quals)
- 7) Anthony Terraciano (M.S. & Ph.D. Student, co-*advised with Dr. Nina Orlovskaya*)

##### **Current Undergraduate Honors in the Major Theses**

- 1) Owen Pryor (Honors B.S. & M.S.)
- 2) Steven O'briant (Honors B.S. & M.S.)
- 3) Joseph Lopez (Honors B.S. & M.S.)
- 4) Zachary Loparo (Honors B.S. & M.S.)
- 5) Caleb Amy (Honors B.S. & M.S.)

##### **MS Thesis and Ph.D. Dissertation Committee Member**

- 1) Jared Pent, Ph.D. in progress (adviser Dr Kapat)
- 2) David Canon, Ph.D. in progress (adviser Dr. Kapat)
- 3) Greg Natsui, Ph.D. in progress (adviser Dr. Kapat)
- 4) Srikrishna Mahadevan, Ph.D. in progress (adviser Dr. Kapat)
- 5) Roberto Claretti, M.S. in progress (adviser Dr. Kapat)
- 6) Mohammed Badughaish, Ph.D. in progress (adviser, Dr. Kapat)
- 7) Mathew Golsen, Ph.D. in progress (adviser Dr. Kapat)
- 8) Lucky Tran, M.S. in progress (adviser Dr. Kapat)
- 9) Perry Johnson, M.S. 2013 (adviser Dr. Kapat)
- 10) Greg Natsui, M.S. 2013 (adviser Dr. Kapat)
- 11) Mathew Golsen, M.S. 2013 (adviser Dr. Kapat)
- 12) Steven Rizea, M.S. 2012 (adviser Dr. Ilie)
- 13) Michael Torrance, M.S. 2012 (adviser Dr. Kapat)