Aditya Dilip Lele

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Education

- **Pennsylvania State University** — State College, PA, USA
  Doctor of Philosophy in Mechanical Engineering; CGPA:3.89/4.0 — *Aug '18 – current*
- **Indian Institute of Technology Madras** — Chennai, India
  Master of Science (by research) in Mechanical Engineering; CGPA:8.8/10 — *Jan '16 – Jul '18*
- **Vishwakarma Institute of Technology** — Pune, India
  Bachelor of Technology in Mechanical Engineering; CGPA: 9.31/10 — *July '11 – May '15*

Academic Experience

- **Carbon materials, Combustion chemistry** — PennState, USA
  Advisor: Prof. Adri van Duin — *Jan '19 – current*
  - Oxidation and pyrolysis of jet fuel surrogates using atomistic-scale simulations
  - Atomistic-scale simulations of CNT growth on metal nanoparticle surfaces

- **Development of a surrogate mechanism for biodiesel** — IIT Madras, India
  Advisors: Dr. Krithika Narayanaswamy and Dr. Anand Krishnasamy — *Jan '16 – Jul '18*
  - A well validated surrogate mechanism has been developed as a part of this project, which can be employed in engine CFD studies to understand NO_x formation.
  - This surrogate kinetic mechanism comprises of kinetic schemes for methyl butanoate, a well studied methyl ester, and *n*-dodecane, which is found to be promising as a biodiesel surrogate.
  - Measurements of pressure, temperature and NO_x are being obtained in an actual engine to assess the correctness of the kinetic model description.
  - Skills acquired : Combustion kinetic modeling, Model reduction, Engine CFD modeling

- **Ignition delay time measurement for Methyl Butanoate in RCM** — PTB, Germany
  Advisors: Prof. Ravi Fernandes and Dr. Kai Moshammer — *May '17 - July '17*
  - Ignition delay time measurements were performed in a single piston Rapid Compression Machine (RCM) to investigate auto-ignition behavior of methyl esters complementing surrogate mechanism development as a part of master's thesis project.
  - These experiments involved measurements with low vapour pressure fuel (Methyl Butanoate) in previously unexplored conditions.
  - Skills acquired : Auto-ignition experimentation, pressure and temperature measurement

Research Output

- **Lele, Aditya**, Karan Soni, Krithika Narayanaswamy, and Anand Krishnasamy. Experimental and Modeling Investigation of NO Formation Mechanism for Biodiesel and Its Blend with Methanol. No. 2019-01-0217. *SAE Technical Paper*, 2019.
- **Lele, Aditya D.**, Sonal K. Vallabhuni, Kai Moshammer, Ravi X. Fernandes, Anand Krishnasamy, and Krithika Narayanaswamy. "Experimental and chemical kinetic modeling investigation of methyl butanoate as a component of biodiesel surrogate." *Combustion and Flame* 197 (2018): 49-64.
- Vallabhuni, Sonal K., **Aditya D. Lele**, Vaibhav Patel, Arnas Lucassen, Kai Moshammer, Mohammed AlAbbad, Aamir Farooq, and Ravi X. Fernandes. "Autoignition studies of Liquefied Natural Gas (LNG) in a shock tube and a rapid compression machine." Fuel 232 (2018): 423-430.
- **A. D. Lele**, K. Anand, K. Narayanaswamy, Surrogates for biodiesel: review and challenges, in: Biofuels A. Agarwal, R. Agarwal, T. Gupta, B. Gurjar (Eds), Biofuels, Green Energy and Technology, Springer, Singapore, 2017, pp. 177-199.
- **A. D. Lele**, K. Anand, K. Narayanaswamy, Development of a chemical kinetic mechanism for biodiesel surrogate, 10 th US National Combustion Meeting (2017), Paper 2D02.

Professional Experience

- **Gear Shift Quality Assessment Tool**
  Eaton India Pvt. Ltd. *Jul '15 – Dec '15*
  - Assessed gear shift quality for driver comfort in long haul heavy duty vehicles.
  - An excel tool was developed to investigate effect of gearbox design parameters on gear shift quality.

- **Single Minute Exchange of Die**
  Panse Autocomp Pvt. Ltd. *May '13 – Jul '13*
  - Implemented resource management strategies to optimize production of an assembly.
  - Existing assembly process was assessed for time critical sub-processes and a solution was developed to improve efficiency of these sub-processes.

Technical Skills

- **Simulation tools:** FlameMaster, ChemKin, Forte, Pro/ENGINEER, ReaxFF
- **Programming Languages:** C++, Perl
- **Other:** Linux, LaTeX, MS Excel, MATLAB

Teaching Experience

- **Teaching assistant:** Numerical Methods for Thermal Engineering (IIT Madras, Spring 2017)
- **Mentoring:** Mentored an undergraduate intern on "Fuel surrogate optimization" project

Relevant Coursework

- **Regular courses:** IC Engine Combustion and Pollution (Fall 2016), Alternate Fuels for IC Engines (Spring 2016), Combustion Technology (Spring 2016), Applied Thermodynamics (Fall 2016)
- **Short term courses:**
  - Combustion in Engines: conducted by Prof. Malcom Lawes, University of Leeds
  - Theoretical and Kinetic Aspects of Combustion: conducted by Prof. Kalyan Seshadri, University of California San Diago

Scholastic Achievements

- Received "Indo-German Centre for Sustainability" scholarship for a short term research stay in Germany, 2017.
- Received HTRA (Research Assistantship) for the entire duration of M.S. degree
- One among 750 students from a pool of about 350,000 students to be awarded National Talent Search Examination Scholarship by the Government of India, 2008
- 9^{th} state rank in High school Scholarship exam by State Government of Maharashtra, 2006.