

Sykam Surendra Varma
Ph.D.
Mechanical Engineering
Indian Institute of Technology-Bombay
Specialization: Transport Phenomena
in Double-diffusive Systems

Email: ssv.varma340@gmail.com
Mobile: +(91)-9833863234
DOB: 29/08/1990
Gender: Male



Examination	University	Institute	Year	CPI/%
Ph.D.	IIT Bombay	IIT Bombay	2019	8.23
B.Tech	JNTU Hyderabad	JNTUH College of Engineering, Hyderabad	2011	73.78
Intermediate	Board of Intermediate Education, Andhra Pradesh	Sri Chaitanya Vidyalaya, Guntur	2007	92.5
SSC	Board of Secondary Education, Andhra Pradesh	Bhashyam High School, Guntur	2005	87

WORK EXPERIENCE

Institute Post-Doctoral Fellow	Indian Institute of Technology Kanpur	Dec 2020 - Present
Research Associate	Indian Institute of Technology Bombay	Oct 2018 - Mar 2019

RESEARCH & ACADEMIC PROJECTS

- **Ph. D. Thesis title:** *"Development and Applications of Dual-wavelength Interferometry for Simultaneous Measurements of Temperature and Concentration Fields"*.
Advisor: Prof. Atul Srivastava (Indian Institute of Technology Bombay) [Jan 2012- Jan 2019].
- B. Tech. Project: *"Investigation of Suitability of Safflower Oil as a C.I. Engine Fuel"*. **Advisor: Prof. A. Aruna Kumari (Jawaharlal Nehru Technological University Hyderabad) [July 2010-May 11].**
- B. Tech Mini Project: *"Fabrication of Crusher & Screeners at PUZZULONA MACHINERY FABRICATORS"* [June-July 2010].

ACHIEVEMENTS & AWARDS

- Secured All India Rank 390 in Graduate Aptitude Test in Engineering (Gate) - 2011 in Mechanical Engineering stream jointly conducted by IITs and IISc.
- Secured All India Rank 8154 in All India Engineering Entrance Examination (AIEEE) - 2007.
- Secured State Rank 3428 in Engineering, Agriculture and Medical Common Entrance Test (EAMCET) - 2007.

PUBLICATION/CONFERENCE PROCEEDING

- **S.S. Varma** and Atul Srivastava, "Performance evaluation of ceiling crystallization for suppressing buoyancy-induced convection in mass transfer applications: An interferometric study" *International Journal of Heat and Mass Transfer* 84 (2015) 61-72.

- **S.S. Varma** and Atul Srivastava, "Reconstruction of concentration fields around a crystal growing in ceiling configuration" *23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference* 17-20 December, 2015, Thiruvananthapuram, India.
- **S.S. Varma** and Atul Srivastava, "Real-time two-color interferometric technique for simultaneous measurements of temperature and solutal fields" *International Journal of Heat and Mass Transfer* 98 (2016) 662-674.
- **S.S. Varma**, S. Srinivas Rao and Atul Srivastava, "Simultaneous measurement of solutal & thermal diffusivities using dual wavelength interferometer" *First Pacific Rim Thermal Engineering Conference, PRTEC 2016*, Hawaii's Big Island, USA, 13-17 March, 2016.
- **S.S. Varma**, S. Srinivas Rao and Atul Srivastava, "Simultaneous measurement of thermal and solutal diffusivities of salt-water solutions from a single-shot dual wavelength interferometric image" *Experimental Thermal and Fluid Science* 81 (2017) 123-135.
- **S.S. Varma** and Atul Srivastava, "Dual-wavelength interferometry-based three-dimensional simultaneous reconstruction of temperature and concentration fields in double-diffusive convection systems: Part 1" *Journal of Flow Visualization and Image Processing* 25 (2018) 163-189.
- **S.S. Varma** and Atul Srivastava, "Dual-wavelength interferometry-based three-dimensional simultaneous reconstruction of temperature and concentration fields in double-diffusive convection systems: Part 2", *Journal of Flow Visualization and Image Processing* (to be submitted).
- **S.S. Varma** and Atul Srivastava, "Simultaneous reconstruction of temperature and concentration fields above a directionally growing NaClO₃ crystal in diffusing thermal field using Genetic Algorithm-based dual-wavelength interferometric tomography: Part 1" (*under preparation*).
- **S.S. Varma** and Atul Srivastava, "Simultaneous reconstruction of temperature and concentration fields above a directionally growing NaClO₃ crystal in diffusing thermal field using Genetic Algorithm-based dual-wavelength interferometric tomography: Part 2" (*under preparation*).
- **S.S. Varma** and Atul Srivastava, "Evaluation of three-dimensional microscopic concentration fields around a growing NaClO₃ crystal in ceiling configuration using Genetic Algorithm-based interferometric tomography: Part 1" (*under preparation*).
- **S.S. Varma** and Atul Srivastava, "Evaluation of three-dimensional microscopic concentration fields around a growing NaClO₃ crystal in ceiling configuration using Genetic Algorithm-based interferometric tomography: Part 2" (*under preparation*).

CONFERENCE PRESENTATIONS

- **S.S. Varma** and Atul Srivastava, "Reconstruction of concentration fields around a crystal growing in ceiling configuration" *23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference* 17-20 December, 2015, Thiruvananthapuram, India.
- **S.S. Varma** and Atul Srivastava, "Simultaneous measurement of solutal & thermal diffusivities using dual wavelength interferometer" *First Pacific Rim Thermal Engineering Conference, PRTEC 2016*, 13-17 March, 2016, Hawaii's Big Island, USA.

POSITIONS OF RESPONSIBILITIES

TEACHING ASSISTANT, IIT BOMBAY

- Advanced Heat Transfer [July - present, 2016]
- Optical Methods in Mechanical Engineering [Jan - May, 2016, 2015, 2014, 2013]
- Advanced Thermodynamics [July - Dec, 2015]
- Computational Methods in Thermal and Fluid Engineering [July - Dec, 2014]
- Experimental and Measurement Laboratory [July-Dec, 2012, 2013]

WORKSHOPS

- **S.S. Varma**, Atul Srivastava, “Whole-field measurement of temperature and concentration fields in double-diffusive convection system using dual wavelength interferometry”, *Indo-French Workshop on Phase-Change Thermal Systems*, Khajuraho (MP), India, 29 November to 01 December, 2016.

RESEARCH SKILLS

- Development of optical techniques and its related data analysis procedure.
- Genetic Algorithm (AI), Tomography, Optimization, Image processing, Fringe pattern analysis.
- Imaging sensors

TECHNICAL SKILLS

- Master diploma in Computer Aided Designing & Engineering
- Languages: Matlab
- Scientific Software: Tecplot

RELEVANT COURSES

- Optical Methods in Mechanical Engineering
- Transport Phenomena
- Computational Methods in Thermal and Fluid Engineering
- Convective Heat and Mass Transfer

RESEARCH INTERESTS

- Application of Machine Learning in the field of Thermal & Fluid Engineering
- Tomographic Imaging, Image Reconstruction
- Optical Systems
- Crystallization, Heat and Mass Transfer
- Double-diffusive Systems

REFERENCES

- Prof. Atul Srivastava, Professor, Department of Mechanical Engineering, IIT-Bombay, Powai, India. E-mail: atulsr@iitb.ac.in