

# SYAM S.

## Research Scholar, Indian Institute of Technology Kharagpur

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## OBJECTIVE

I am looking for a career in research where I can acquire new knowledge and share my experience and skills to create value and achieve the common goal.

## EDUCATION

### Doctor of Philosophy

#### Indian Institute of Technology Kharagpur

⌚ 2013 – till date ⚽ West Bengal, India

##### **✍ Thesis Title: Experimental and Numerical Investigation on Droplet Combustion**

Thesis supervisors: Dr. Srinibas Karmakar & Dr. Ratan Joarder, Department of Aerospace Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India (Thesis is under preparation)

### Master of Technology in Turbomachines

#### S. V. National Institute of Technology

⌚ 2011 - 2013 ⚽ Surat, India ⚽ CGPA: 8.98/10

##### **✍ Project: Design and Optimization of High-Pressure Ratio Airfoils for Axial Flow Compressors**

Project Supervisors: Dr. S. A. Channiwala, S. V. National Institute of Technology, Surat, India

### Bachelor of Engineering in Aeronautical Engineering

#### The Aeronautical Society of India

⌚ 2005 - 2011 ⚽ New Delhi, India ⚽ Percentage: 58.35

##### **✍ Project: A Review on Shock Wave Boundary Layer Interaction**

### Vocational Higher Secondary Examination (Class XII )

#### Board of Vocational Higher Secondary Examinations

⌚ 2003 - 2005 ⚽ Kerala, India ⚽ Percentage: 71.50

### Senior Secondary Leaving Certificate (Class X)

#### Board of Public Examinations

⌚ 2003 ⚽ Kerala, India ⚽ Percentage: 59.16

## SKILLS

Fortran



Matlab



OpenMP



LabView



ANSYS Gambit and Fluent



SolidWorks



LaTeX



AxSTREAM



HTML



## Operating Systems

Windows

Linux

## ACHIEVEMENTS

### **🏆 All India Rank - 58**

Secured all india rank 58 in Graduate Aptitude Test in Engineering (GATE) - 2011 (Aerospace Engineering) with a score of 555 (Percentile: 98.02)

### **🏆 MHRD Fellowship**

Recipient of Ministry of Human Resource Development (MHRD), India Fellowship during masters [M. Tech (2011-2013)] and doctoral studies (2013-present)

## TEACHING ASSISTANCE

### Propulsion Lab (AE39004)

⌚ Spring 2013-14, 2014-15

### Thermodynamics and Aerospcae Propulsion System (AE31001)

⌚ Autumn 2014-15, 2015-16

### Combustion Processes in Jet Engines (AE51007)

⌚ Spring 2015-16

# JOURNAL PUBLICATION

- D. Chaitanya Kumar Rao, S. Syam, Srinibas Karmakar, and Ratan Joarder, "Experimental investigations on nucleation, bubble growth, and micro-explosion characteristics during the combustion of ethanol/Jet A-1 fuel droplets", Experimental Thermal and Fluid Science, 89, 284-294, 2017.

## CONFERENCE PRESENTATIONS

- D. Chaitanya Kumar Rao, S. Syam, Srinibas Karmakar. "Droplet Combustion Characteristics of Butyl Butyrate, Limonene, and their Blends with Jet A-1", 54th AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, 4-8 January 2016, San Diego, California, USA (AIAA 2016-1682).
- S. Syam, D. Chaitanya Kumar Rao, Srinibas Karmakar, and Ratan Joarder. "Puffing and Micro-explosion behaviour of Ethanol/Jet A-1 Fuel Droplets", 54th AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, 4-8 January 2016, San Diego, California, USA (AIAA 2016-1683).
- S. Syam, Srinibas Karmakar, Ratan Joarder, "An experimental study on droplet combustion of different fuels and biofuel blends in open atmosphere", ICTACEM 2014, December 29-31, 2014, IIT Kharagpur, India, No. 335.
- S. Syam, Nilesh S., Vilash R. S., and Channiwala S. A., "Optimization of CDA Cascade using Parameterization and Genetic Algorithm coupled with CFD", 2nd International Conference on Mechanical, Automotive and Aerospace Engineering (ICMAAE 2013), Kuala Lumpur, 2013, Aerospace propulsion 1- 5

## PROJECTS

### PhD thesis

#### Experimental and Numerical Investigation on Droplet Combustion

- An experimental facility was developed for the droplet combustion
- An in-house Matlab tool was developed for high speed image analysis
- Studied the effects of ethanol blending on combustion characteristics of Jet A-1 fuel droplets
- The macro-photographic method was adopted and implemented for assessment and characterization of the disruptive phenomena (like bubble nucleation, bubble growth, puffing and micro-explosions) observed during droplet combustion
- A multi-phase code developed using AUSM<sup>+</sup>-up scheme and two-fluid model for single-component droplet evaporation

### Masters thesis

#### Design and Optimization of High-Pressure Ratio Airfoils for Axial Flow Compressors

- Parameterization of the high speed axial flow compressor CDA airfoil shapes was performed using Bezier curve method
- Optimized the CDA airfoil shapes using Genetic Algorithm (GA) to obtain minimum pressure loss by coupling the Ansys Gambit and Fluent software's and Matlab GA code
- Low speed experimental study was performed on the optimized CDA airfoil cascade

### Engineering Drawing and Computer Graphics (CE13001)

Autumn 2016-17, 2017-18, 2018-19

### Theory of Jet Propulsion (AE31001)

Spring 2016-17, 2017-18

## AREAS OF INTEREST

### Droplet and spray combustion

Bio-fuels      Renewable fuels

### Experimental studies in fluid mechanics

Aerodynamics      Airfoils      Cascades

### Numerical study of multiphase flows

Two-fluid model      Mass transfer

### Computational Fluid Dynamics

Aerodynamics      Combustion

### High performance computing

OpenMP      MPI      GPUs

### Propulsion systems

Gas turbine engines

### Flow through turbomachines

Design of compressor and turbine

## ROLES

### Member

#### Research Scholars' Representative Council

2017 - 18

IIT Kharagpur

### Research Scholars' Representative

#### Department of Aerospace Engineering

2014 - 15

IIT Kharagpur

### Volunteer

#### Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM)

December 2014      IIT Kharagpur

## REFEREES

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### Dr. Srinibas Karmakar

✉ Asst. Professor, Department of Aerospace Engineering, Indian Institute of Technology Kharagpur, West Bengal, India – 721302

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### Dr. Ratan Joarder

✉ Asst. Professor, Department of Aerospace Engineering, Indian Institute of Technology Kharagpur, West Bengal, India – 721302

✉ jratan@aero.iitkgp.ac.in /jratan@gmail.com

☎ +91 (3222) 283000

## DECLARATION

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I hereby declare that all the information provided above is correct and true to the best of my knowledge. If I have given a chance to work with your esteemed institute, I assure you that I shall discharge my duties with utmost satisfaction and growth of the institution.

SYAM S.

## MEMBER

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The Aeronautical Society of India

## PERSONAL PROFILE

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- Ready to learn and apply new concepts and technologies
- Good verbal and written communication skills
- Self-motivated and passionate to achieve the goals
- Good team player and ability to work independently also

Nationality: Indian

Date of birth: 25 - May - 1988

Marital Status: Unmarried

Languages (Read, Write, & Speak):

English    Hindi    Malayalam  
Tamil (Speak)