

# SYAM S.

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## OBJECTIVE


I am looking for a career in teaching and research where I can share my knowledge and experience to create value for the seeker and fulfill the mission and vision of the institute.

## EDUCATION


 Ph. D. in Aerospace Engineering  
Indian Institute of Technology Kharagpur

 2013 - 2020     West Bengal, India

 **Thesis Title: An Experimental Investigation on Combustion Characteristics of Jet A-1/Ethanol Droplets and Numerical Simulation of Droplet Evaporation Using Two-Fluid Model**  
Thesis supervisors: Dr. Srinibas Karmakar & Dr. Ratan Joarder, Department of Aerospace Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India

 Masters in Turbomachines  
S. V. National Institute of Technology

 2011 - 2013     Surat, India

 **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

 Bachelors in Aeronautical Engineering  
The Aeronautical Society of India

 2005 - 2011     New Delhi, India

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

## 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.

## SKILLS


|                         |        |
|-------------------------|--------|
| Fortran                 | ●●●●●● |
| Matlab                  | ●●●●●● |
| OpenMP                  | ●●●●●● |
| LabView                 | ●●●●●● |
| ANSYS Gambit and Fluent | ●●●●●● |
| SolidWorks              | ●●●●●● |
| LaTeX                   | ●●●●●● |
| OpenFOAM                | ●●●●●● |
| Python                  | ●●●●●● |
| 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 Aerospace Propulsion System (AE31001)

 Autumn 2014-15, 2015-16

### Combustion Processes in Jet Engines (AE51007)

 Spring 2015-16

## 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 Channiwalla 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

### Ph. D. Thesis

#### An Experimental Investigation on Combustion Characteristics of Jet A-1/Ethanol Droplets and Numerical Simulation of Droplet Evaporation Using Two-Fluid Model

- Developed a numerical code (Fortran and OpenMP) for multiphase flow analysis (Two-Fluid Model) of droplet evaporation using finite volume formulation (AUSM+-up scheme).
- Developed an image processing tool (MATLAB) for analyzing high-speed photographic images.
- Developed a high magnification and high-resolution micro-imaging technique for Jet A-1/ethanol droplet combustion.
- Developed an experimental setup for the single droplet combustion studies.

### Masters Thesis

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

- Performed parameterization of high-speed axial flow compressor airfoils (CDA) using the Bezier curve method.
- Developed a MATLAB code for coupling the Ansys Gambit and Fluent softwares with the Genetic Algorithm toolbox (MATLAB) to optimize the CDA airfoils.
- Conducted low-speed wind tunnel experiments on the optimized CDA airfoil cascade model.

### 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

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

**Prof. Srinibas Karmakar**

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

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**Prof. Ratan Joarder**

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

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

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## DECLARATION

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 at your esteemed institute, I assure you that I will discharge my duties with utmost satisfaction and growth of the institution.

SYAM S.

## MEMBER

The Aeronautical Society of India

## PERSONAL PROFILE

- 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)