

## MAE-Industry Connect 2024

### ON GOING PROJECTS



**PANKAJ KOLHE**  
Professor  
Alternative fuels, combustion, and optical diagnostics in dynamic flows.



**RAJA BANERJEE**  
Professor  
Multiphase Flow, Heat and Mass Transfer, Thermodynamics, CFD.



**SARAVANAN B**  
Professor  
Combustion, Thermoacoustic Instabilities, Laser Diagnostics.



**Venkatesubrah K**  
Professor  
CFD & Heat transfer, Cooling of Electronic Devices and Aerodynamics.



**SAYAK BANERJEE**  
Associate Professor  
Kinetic Model Reduction, Bio-fuel Combustion & Emission Diagnostics.



**VISHNU R UNNI**  
Assistant Professor  
Reactive fluid dynamics, Complex self-organized turbulent flows.



**GNANAPRAKASH K**  
Assistant Professor  
Solid fuels & Metal combustion, Thermal sciences, Energetic materials.

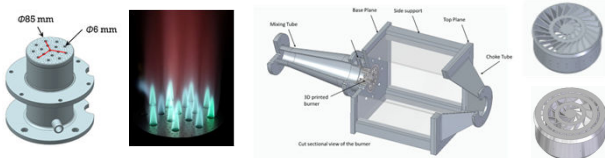


**S K KARTHIK**  
Assistant Professor  
Gas dynamics, jet aeroacoustics, hypersonic aerothermodynamics.

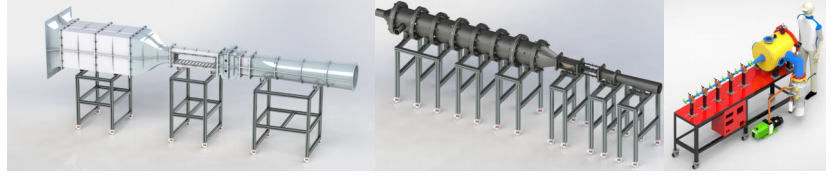
1. Lemon Peel Oil as a Bio-Aviation Fuel
2. Hydrogen Generation and Storage from Biomass
3. Endothermic Cooling of Hypersonic Engines
4. NH<sub>3</sub>-CH<sub>4</sub>-Diesel Fueled CI Engine
5. Investigation of Thermo-acoustics of a Hydrogen Burner System
6. Design and development of an arc jet plasma facility for erosion testing
7. Investigation of end-wall acoustic loading on a deep duct present ahead of a recirculation bubble for a wide range of Mach numbers
8. Deep sub-cavities in compressible flow
9. Design and development of M6 hypersonic contoured nozzle
10. Development of on-board spray controller model in an unmanned aerial vehicle using artificial intelligence for precision agriculture application
11. Development and Determination of Operability Margins of a 3D Printed Hydrogen Burner System DST
12. Simulation of Homing System of Naval Torpedo
13. Fuel Flexible Novel Flow Blurring Injector based Swirl Stabilized Burner
14. Experimental and Modelling Study on the Feasibility and Optimization of CI Engine Operation using Ammonia-Methane-Diesel Ternary Fuel Blends
15. Combustion performance and emissions in automotive and power generation combustion systems on Alternate and blended fuels
16. Development of robotic aircraft refueling system

FUNDING – 21 Cr.

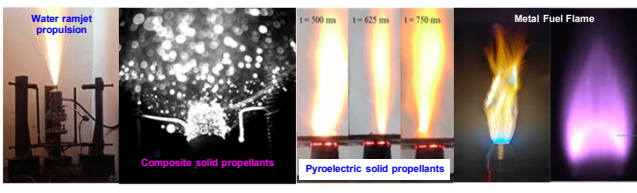
### 3D printed hydrogen burner units



### Compressible flow wind tunnels (transonic, supersonic, hypersonic)



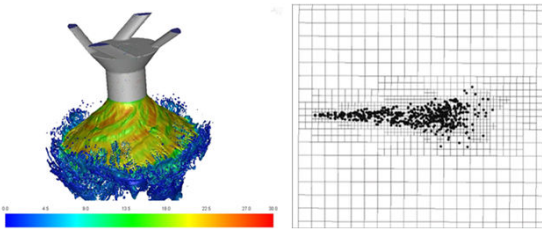
### Energetics and Propulsion



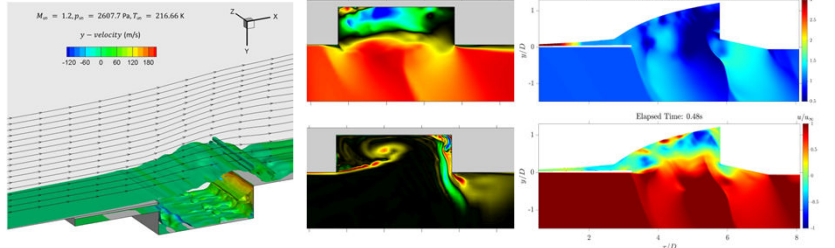
### Flat flame burner, GC-VUV analyzer, Supers-critical pyrolysis reactor



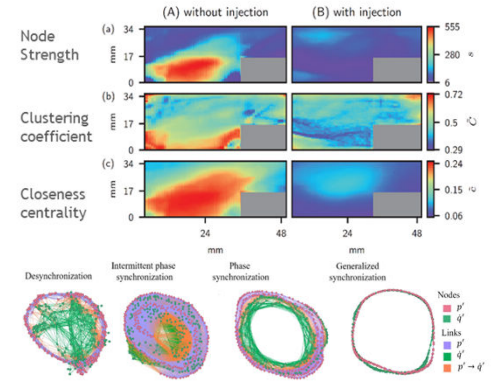
### Computational modelling & Spray characterization



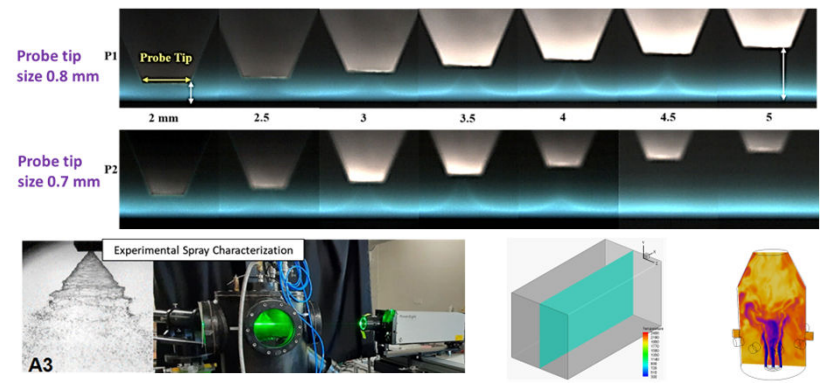
### Compressible cavity flow - Scramjet



### TA instability is suppressed by disrupting critical region



### Development of Sampling Probe & experimental spray characterization



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