

## Research Facilities in Rocket Propulsion

### View of Department Building



The facilities available are Faculty rooms, Seminar halls, Departmental library, computing facility and Departmental stores.

### Entry to Rocket Propulsion Laboratory



It has static rocket test facility for solid, liquid and hybrid rocket motors. Apart from these, it has facilities such as low and high pressure burning rate facilities for solid propellant, ignition and combustion facility for liquid and hybrid propellants, propellant processing lab, combustion and thermal analysis lab. etc

## Propellant Technology Laboratory



***Propellant Processing Lab:*** This lab contains various types of chemicals used for solid propellant processing, liquid bipropellant ignition delay tests, and formulation of pyrotechnic igniters. It also has Fume Chamber in which the Burning rate, ignition and combustion of propellants can be measured.



***Propellant Processing Lab:*** Demonstration of propellants grains of various geometry, pyrotechnic igniters, tracer, lighter, delay column for various applications at laboratory scales.



***Propellant Processing Lab:*** It is a part of propellant technology lab, which consists of rapid moisture analyzer, electronic weighing balance, magnetic stirrer cum hot plate, mechanical mixer and ignition delay measuring apparatus.



***Sigma Blade Mixer:*** The sigma blade mixers are used for mixing and processing of solid composite propellant grains of various perforations



***Vacuum Casting Unit & Sieve-Shaker:*** The vacuum casting unit used for casting of composite solid propellants in order to get grains free from cracks or voids. Different particle size can be obtained by using sieve-shaker instrument.



***Digital bomb calorimeter:*** It is used to measure heat of combustion, enthalpy and heat of reaction of various fuels materials as well as the solid propellants.



***Static test facility for hybrid rocket motor:*** This facility enables us to get regression rate, pressure of combustion chamber and thrust during the operation of hybrid rocket motor.



***Instrumental facility:*** It enables us to get thermal decomposition behavior, heat flow and transition temperature various ingredients of propellants at different condition.



***Instrumental facility:*** It is a part of Instrumental facility which enables us to get rheological properties of various fluids of our interests.



***Hilton's flame stability and flame propagation unit:*** This set up enables us to analyze the turbulence and diffusion flame properties, flame stability at different O/F ratio and mechanistic part of yellow tipping, lift-off phenomena and others.



*Liquid & Hybrid Rocket Test Facilities*



*Control panel and high pressurization system for fuel and oxidizer tanks*



*Firing control unit for liquid & hybrid rocket motors*



*Launchers for dynamic rocket firing*