

ALL ARE WELCOME

M.S. Seminar Talk

Title: **Study of burning rate and flame dynamics of small-scale methanol and n-heptane pools inside cavity subjected to air crossflow**

Speaker: **Mr. Vedant Bhagwat (ME23S005)**

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Date and Time: **12-05-2026 @ 2:00 PM**

Venue: **Room No. 363, Conference Room, NAC-II &**

Link: <https://meet.google.com/wvw-razz-zph>

Abstract

This experimental study focuses on combined effects of crossflow air convection and cavity height (ullage) on the burning characteristics of small-scale methanol and n-heptane pools. The mass burning rate, flame dynamics and flame stabilization have been investigated. The cavity height has been varied from 0 to 45 mm for methanol, and from 0 to 30 mm for n-heptane. The liquid fuel is supplied to the surface of a porous ceramic wick, which is kept saturated by the liquid in the fuel tank. Fuel vapor emerges from the wick surface due to heat transfer from ambient. Air is supplied parallel to the wick surface at speeds ranging from 0.125 m/s to 2.77 m/s. Zero ullage case results in higher mass burning rate compared to non-zero ullages for all air velocities with stable flames. Also, for zero ullage, the mass burning rate increases with increasing air velocity. However, after a certain air velocity, the flame blows off. For non-zero ullages, flames are stabilized even at higher velocities, showing that the flame stability has significantly improved due to ullage that causes an increase in the residence time. But the mass burning rate decreases with increasing air velocity to produce a local minimum. The reasons for these trends have been analysed using the flame shapes and flame stand-off distances from the fuel wick surface.