



Thesis Title: CMOS-Compatible MEMS Pirani gauge for Broad Range Vacuum Measurements



Manu Garg, IITD/NYCU

IIT Delhi Advisor & Dept.: Dr. Pushpapraj Singh, CARE
NYCU Advisor & Dept.: Dr. Yi Chiu, Electronics & Electrical Engineering

Current status/stage of your JDP: Thesis Submitted at IITD and Graduated from NYCU

1. Integration of polymer (SU-8) with Nickel heater to achieve a broader dynamic range due to reduced solid conduction.
 2. Metal-oxide (V2O5) based heating filament demonstrating superior gauge performance in terms of lower detection limit and longevity owing to its lower thermal conductivity and strong oxidization resistance.
 3. Integrating electrostatic actuation to tune the gaseous conduction gap and shifting the transition pressure towards the continuum regime, achieving a higher upper detection limit.
 4. Implementing a monolithically integrable gauge in the back-end-of-line (BEOL) layers using the TSMC 0.35 μm 2P4M commercial CMOS process.
- 5 Journals/ 7 Conferences

