



Thesis title: Hermeticity monitoring for MEMS devices – Microbolometers

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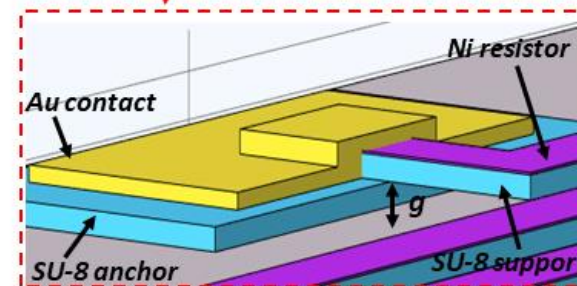
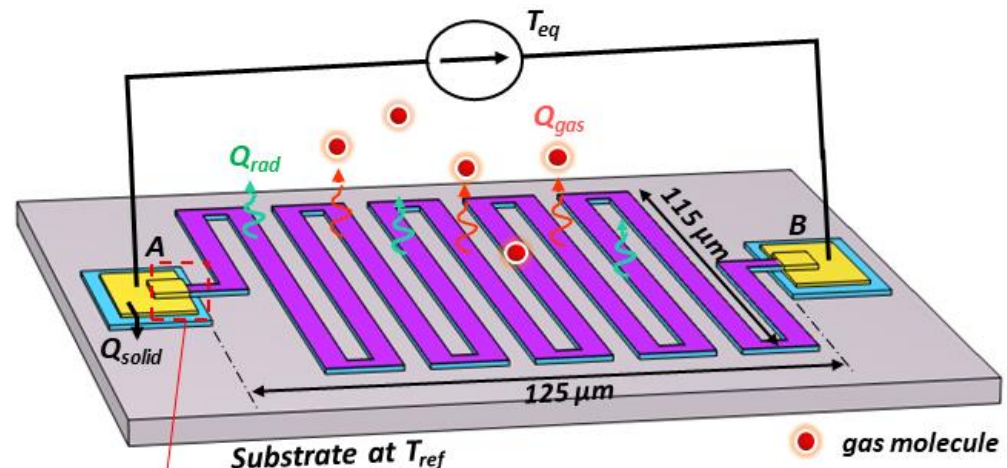
IIT Delhi Advisor & Dept.: Prof. Pushparaj Singh, Centre for Applied Research in Electronics
NYCU Advisor & Dept.: Prof. Yi Chiu, Department of Electrical and Computer Engineering

Research Work:

- Development of highly sensitive MEMS Pirani gauge.
- Integration of MEMS Pirani gauge with primary MEMS devices and on chip area reduction.

Publication (Conference):

1. **A. Kumari**, M. Garg, P. Kumar, and P. Singh, “Electrothermal analysis of a simple MEMS Pirani Gauge with a lower detection limit,” in *2024 8th IEEE Electron Devices Technology & Manufacturing Conference (EDTM)*, Bangalore, India: IEEE, Mar. 2024, pp. 1–3. doi: 10.1109/EDTM58488.2024.10512343.
2. P. Kumar, N. Narang, A. K. Dhakar, **A. Kumari**, K. Joshi, and P. Singh, “Design of High Isolation Low Loss MEMS Ohmic Switch for Radio Frequency Applications,” in *2024 8th IEEE Electron Devices Technology & Manufacturing Conference (EDTM)*, Bangalore, India: IEEE, Mar. 2024, pp. 1–3. doi: 10.1109/EDTM58488.2024.10511934.



Parameter	Value
Ni resistor thickness (t)	$0.1 \mu\text{m}$
SU-8 Support thickness	$1 \mu\text{m}$
Suspended gap (g)	$1 \mu\text{m}$
Length of one line	$115 \mu\text{m}$
Length of the resistor	$125 \mu\text{m}$
Total Length (L) of the unfolded resistor	$1279 \mu\text{m}$
Width of one line (w)	$5 \mu\text{m}$
Gap b/w lines	$5 \mu\text{m}$

Fig. 1. A schematic of power dissipation of the MEMS Pirani gauge through heat transfer at a constant current bias.