



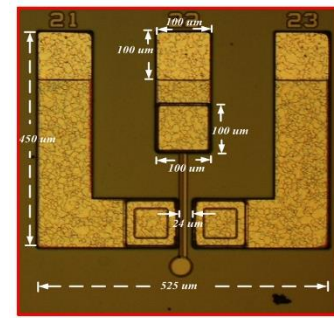
Development and reliability study of sub micron RF GaN HEMT for harsh and space applications

Anant Johari
IITD NYCU JDP

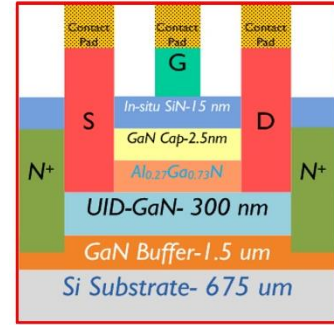
IIT Delhi Advisor & Dept.: Prof. Rajendra Singh Prof. Ankur Gupta
 Department of Physics CARE
 NYCUCU Advisor & Dept.: Prof. Tian-Li Wu
 International College of Semiconductor Technology

- **Ph.D. Objective (s):**
 - ❑ Fabrication and characterization of GaN-on-Si MIS-HEMT devices.
 - ❑ Radiation analysis of GaN HEMTs for space applications.
 - ❑ Cryogenic to high temperature analysis of GaN HEMTs for quantum computing and space applications.
- **Significant Achievements:**
 - ❑ Investigation of DC/RF Performances Degradations on 200 nm gate length GaN-on-Si RF MIS-HEMTs under Gamma Radiation, Anant Johari et al., 2024 IEEE Nuclear & Space Radiation Effects conference (NSREC).
 - ❑ Investigation of DC Characteristics in GaN-on-Si power MIS-HEMTs over a Wide Temperature Range (4 K to 550 K) for Space and Quantum Computing Applications Anant Johari, et.al. 8th IEEE Electron Device Technology and Manufacturing Conference (EDTM).
 - ❑ Investigations of Performances in RF GaN MIS-HEMTs and T-gate Schottky HEMTs with Leakage Current Analysis Using Emission Microscopy Chin-Ya Su, Anant Johari, et al. 24th VLSI Symposium on Technology, Systems and Applications (VLSI-TSA).
 - ❑ Investigation of performance and reliability in RF GaN Schottky HEMTs and MIS-HEMTs Chin-Ya Su, Anant Johari, et al. 2023 International Electron Devices & Materials Symposium, Taiwan.

GaN HEMT for Space



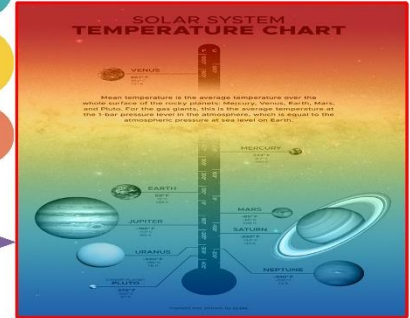
Fabricated GaN-on-Si MIS HEMTs



- 1 Radiation stability
- 2 Temperature stability
- 3 Higher reliability
- 4 RF application
- 5 Space application



Space Environment



Student Name: Anant Johari
 Supervisor(s): Prof. Rajendra Singh (IIT DELHI)
 Prof. Ankur Gupta (IIT DELHI)
 Prof. Tian-Li Wu (ICST, NYCU)

Current status: I have successfully passed the comprehensive exam and completed three years of my Ph.D. program.