PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

PMRF-ISSS087/III/2025

Basics of Reactive Ion Etching

Name of the PMRF student

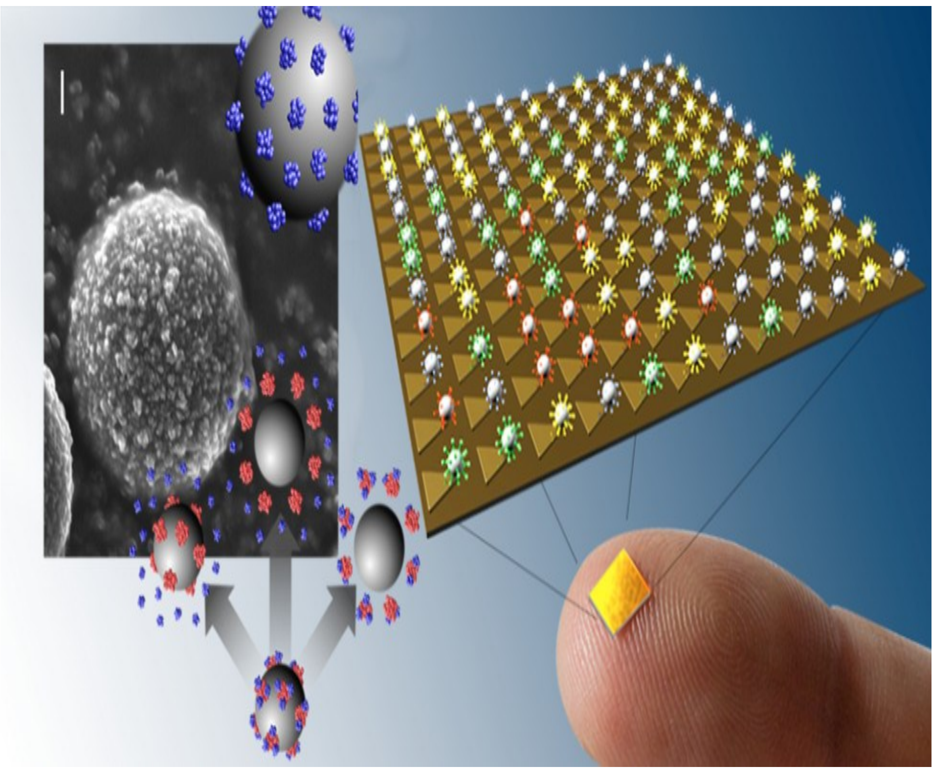
Mohammad Ateeb Munshi

Required background of the students taught

Electronics, Electrical, Physics, Material Sciences

Online session coordinator

Will be chosen from the list of registrants



Details of the content of the module

- **Introduction to etching**

Dry vs Wet etching, Motivation for dry etching in micro/nano-fabrication, Role of RIE in semiconductor processing.

- **Principals of RIE**

Plasma generation basics (RF power, ICP, CCP), Role of radicals, ions, and photons, Anisotropy vs. isotropy in etching.

- **RIE System components**

Vacuum system (chamber, pumps, pressure control), Gas delivery (MFCs, precursor gases)

- **Etching Mechanisms**

Sputtering (physical component), Chemical reactions with radicals, Ion-assisted chemical reactions.

- **Key Process Parameters**

Gas chemistry (Cl_2, BCl_3, CF_4, SF_6, O_2, Ar, etc.), RF power and bias voltage, ICP/RF power ratio

Etch Characteristics

Etch rate and uniformity, Selectivity, Anisotropy.

Schedule of the module

Lectures will be uploaded on **Saturday** 8pm

Lectures will start from **15th September 2025 (Tentative)**

Course will end on October 30th 2025.

Course Hours: 10 Hours

Link

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.gle/BBQs2bDRfPsDHc4CA