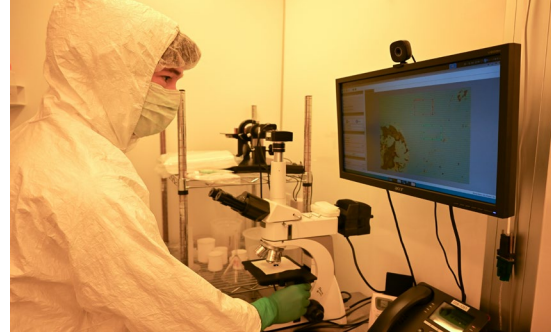


REU Site: Semiconductor Electronics and Photonics at the University of Dayton

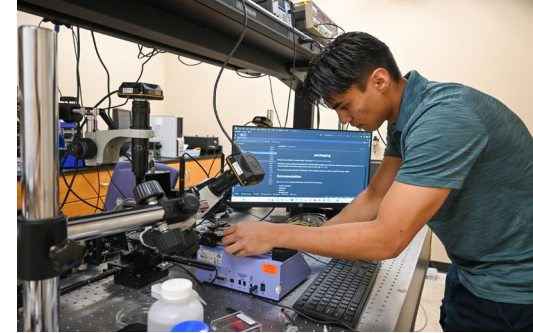
Swapnajt Chakravarty, University of Dayton



Synthesis and characterization of $\text{CuZn}_2\text{As}_x\text{Se}_{4-x}$ ($A = \text{Al, Ga, In}$) semiconductor nanocrystals



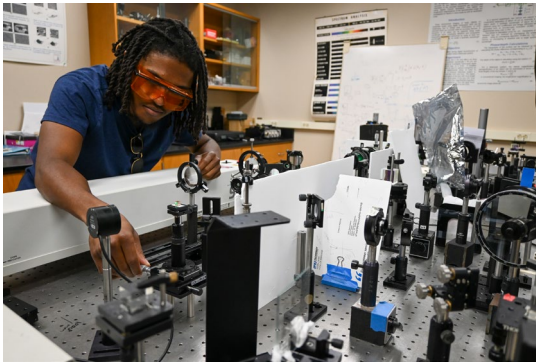
Electrochemical Bubble Delamination and transfer of CVD Graphene onto SiO_2



Design and Fabrication of PDMS Microfluidic channels for integration with photonic chip



Two Dimensional Modular Scalable Electronics Biosensors



The Development of an Improved DMD-Based Maskless Lithography System

Other Topics:

- Aluminum Nitride for Memristor Devices
- Optimizing Electric Fields in Multilayer Thin Films Using Python



Design and Fabrication of Metal-Dielectric High Transmission RGB Color Filters

- REU students received hands-on experience in photolithography, metal lift-off and I-V characterization, and introduction to other process tools at the cleanroom at University of Dayton
- 8 students mentored by 6 UD faculty members worked together with graduate students developing various devices and processes in semiconductor integrated electronics, integrated photonics, materials and measurements, utilizing cleanroom fabrication tools at UD

Swapnajit Chakravarty, University of Dayton

Summer 2023: (Year 1)

31 applicants, 8 selected

- University of Dayton, OH (2)
- University of Texas, El Paso, TX (2)
- St. Mary's University, San Antonio, TX (2)
- Morehouse College, Atlanta, GA (1)
- Youngstown State University, OH(1)

Distribution of Majors

- Electrical and Computer Engineering (2)
- Computer Engineering (1)
- Physics (3)
- Mechanical Engineering (2)

	Graduate Student Life	Technical Topics
Week 1	Overview of grad school	Intel OASIS Rapid Certification Student Chapters (Optica, SPIE)
Week 2	Applying to grad school	Introduction to Semiconductor Materials
Week 3	Applying for fellowships and scholarships	Lithography, PVD, CVD
Week 4	Giving scientific presentations	Thermal Oxidation, Etching
Week 5	Technical writing	Ion Implantation, Diffusion Doping
Week 6	Networking and Interpersonal communication	Graduate Student Presentations
Week 7	Ethics in research	CMOS Process Flow, Metrology
Week 8	Branding and entrepreneurship	Special Topic: Intel Seminar
Week 9	Time management	Semiconductor Packaging
Week 10	Practicing oral presentations and preparing posters for Symposium	REU Oral and Poster Presentations

- **Research supplemented by 10 weeks of seminars geared towards semiconductor workforce development**
 - Technical (Semiconductor Device Manufacturing Steps)
 - Non-technical topics and soft skills development
 - Oral and poster final presentations at university-wide symposium at UD
- Final report writing in journal paper format
- Students encouraged to complete **Intel OASIS certification program at UD**
- **Intel seminar on career paths for graduates and undergraduates**

