Shikhar Arvind

shikhararvind@proton.me — LinkedIn — github.com/ShikharArvind — www.shikhararvind.com

Summary — Final year PhD researcher exploring the interactions of plasma species with ultrathin EUV resists. Have a strong understanding of **EUV lithography** and **resist fundamentals**, **plasma-surface and plasma-resist interactions** and **material characterization**. Experienced in working with diverse, multicultural teams in different countries. Enjoy collaborative work as well as undertaking independent responsibilities. Seeking opportunities in **lithography and related semiconductor manufacturing fields** involving research, continuous learning, teamwork, and substantial industry impact.

Skills

Semiconductor Extensive cleanroom experience (200mm and 300mm Fabs) - Track tools, etch tools (ICP and IBE), characterization tools. Familiar with basic CDSEM and ASML EUV scanner operation.

Characterization Ellipsometry, FTIR, AFM, XPS, ToF-SIMS

Misc. Design of Experiments (DOE), Experience in working with vacuum systems, setting up basic optical systems.

Computer/IT *Data handling*: Python (primary), MATLAB, Origin
OS: GNU/Linux (primary), Windows
Other: Hardware/GUI software in Python, Lithography/Fourier optics simulation in Python and Rust (Hobby), Microsoft Office suite, LaTeX

Soft Skills Analytical Thinking, Effective Communication, Ownership and Accountability, Collaboration and Teamwork.

Research Experience

PhD at imec-KU Leuven, Leuven, Belgium **Nov 2021-Present**
Supervisor: **Prof. Dr. Stefan De Gendt**, KU Leuven
Advisors: **Dr. Esben W Larsen**, imec and **John Petersen**, imec

Topic : *Impact of plasma vacuum ultraviolet (VUV) photons on ultrathin resists for EUV lithography*

- Studying the impact of VUV photons and Ar^+ ions on ultrathin EUV resists during plasma etching.
- Investigating different EUV resist platforms, including extensive physical and chemical characterization of resist thin films.
- Collaborative project interfacing with lithography experts, dry etch experts, resist suppliers and material analysts.
- Teaching assistant of Chemistry and Characterization of Surfaces and Thin Films course.

Master's thesis at RISE, Stockholm, Sweden **Jan 2021 - Jun 2021**
Supervisor: **Dr. Qin Wang**

Topic: *Investigation of GaN based HEMTs for power electronic applications*

- Evaluating the performance of AlGaN/GaN HEMTs (High Electron Mobility Transistors) with different designs and surface treatments by measuring output and transfer characteristics and capacitance curves.

Bachelor's thesis at Karlsruhe Institute of Techonology, Germany **July 2018 - Dec 2018**
Supervisor : **Prof. Dr. Ulrich W. Paetzold**

Topic : *Encapsulation of Perovskite solar cells (PSC)*

- Testing different encapsulation strategies to increase the stability and lifetime of PSC.

Education

PhD/Doctoral studies **2021-Present**
imec-KU Leuven, Belgium
Masters in Nanotechnology (nanoelectronics track) **2019-2021**
KTH Royal Institute of Technology, Stockholm, Sweden
Bachelor of Science (Material Science and Engineering Major) **2015-2019**
Indian Institute of Science (IISc), Bengaluru, India

Academic Participation

Oral conference presentation at *SPIE Advanced lithography + patterning (ALP) 2025* (San Jose, California, USA) **Feb 2025**
Oral conference presentation at *American Vacuum Society (AVS) 70* (Tampa, Florida, USA) **Nov 2024**
Siegman International School on Lasers **June 2022**
5-day laser summer school organized by Optica and University of Warsaw, Poland.
ASML Best of Tech Business Course **April 2021**
Online ASML event offering students insights into the working of the company and additional networking opportunities.
ZEISS Autumn School - Lithography Optics **Sept 2020**
Online autumn school by ZEISS on photolithography, High-NA EUV, EUV photomasks, and semiconductor optics metrology.

Publications

- Shikhar Arvind et al. (2024). “Impact of Vacuum Ultraviolet Photons on Ultrathin Polymethylmethacrylate during Plasma Etching”. *J. Vac. Sci. Technol. A*. DOI: 10.1116/6.0003541.
- Kevin M. Dorney et al. (2024). “Actinic inspection of the extreme ultraviolet optical parameters of lithographic materials enabled by a table-top, coherent extreme ultraviolet source”. *J. Micro/Nanopatterning Mater. Metrol.* DOI: 10.1117/1.JMM.23.4.041406.
- Laura Galleni et al. (2024). “Peak Broadening in Photoelectron Spectroscopy of Amorphous Polymers: The Leading Role of the Electrostatic Landscape”. *J. Phys. Chem. Lett.* DOI: 10.1021/acs.jpclett.3c02640.

Awards and grants

- SPIE student travel grant 2025 for SPIE ALP 2025 conference.
- AVS Dorothy M. and Earl S. Hoffman travel grant for AVS70 conference.
- FWO travel grant for attending the Siegman international school on lasers, Poland.
- KTH Scholarship covering full tuition for master’s program, with selection based on academic excellence.
- Sitaram Jindal Foundation Medal for top academic performance during bachelor studies.
- Fellow of KVPY (Kishore Vaigyanik Protsahan Yojana), a National Program of Fellowship in Basic Sciences in India.

Personal Info

Languages

- English (Fluent)
- Kannada (Native)
- Hindi (Fluent)

References

Available on request