

Shikhar Arvind

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Summary — Final year PhD researcher exploring the interactions of plasma species with ultrathin EUV resists. Have a strong understanding of **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 in while also undertaking independent responsibilities. Seeking opportunities in lithography, plasma etching 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 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.

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

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

Research Experience

PhD at imec-KU 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 resist platforms like CAR and MOR, with extensive physical and chemical characterization of these 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 AlGaIn/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 Technology, 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](https://doi.org/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](https://doi.org/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.jpcllett.3c02640](https://doi.org/10.1021/acs.jpcllett.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 (Advanced)

Nationality

- Indian

References

Available on request