

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. Actively seeking opportunities in lithography and related semiconductor manufacturing fields involving research, continuous learning, teamwork, and substantial industry impact.

Skills

Semiconductor	Extensive cleanroom experience - Track tools and etch tools (ICP and IBE). Familiar with basic CDSEM and EUV scanner operation.	Computer/IT	<u>Data handling</u> : Python (primary), MATLAB, Origin <u>OS</u> : GNU/Linux (primary), Windows <u>Other</u> : Hardware/GUI software in Python, Lithography/Fourier optics simulation in Python and Rust (Hobby), Microsoft Office suite, \LaTeX
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.		

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.

Siegman International School on Lasers

June 2022

5-day **laser summer school** organized by Optica and University of Warsaw, Poland.

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.

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.

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

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.jpcllett.3c02640](#)

Conferences

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| Oral presentation at <i>SPIE Advanced lithography + patterning (ALP) 2025</i> (San Jose, California, USA) | Feb 2025 |
| Oral presentation at <i>American Vacuum Society (AVS) 70</i> (Tampa, Florida, USA) | Nov 2024 |

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.
- 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.

Languages

English

Nationality

Indian

References

Available on request