NANOFABRICATION SEMINAR: Electron Beam Lithography: Going Beyond the Sub-Micron Scale

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December 10, 2025
14:00 to 15:00
Elements Room

The NFL facility is equipped with three different systems for electron beam lithography (EBL), a technique that uses electrons instead of light to pattern structures at the sub-micron and even nanometer scale. Our laboratory counts with two CRESTEC systems (AP50E and 9510C), both operating at 50 kV, and one FEI Inspect F50 system operating at 30 kV.
These tools allow us to explore a wide range of patterning strategies and design possibilities, which are at the core of this seminar. We will begin by revisiting the fundamental principles of EBL, discussing how it differs from the well-known optical lithography, and analyzing its main advantages and limitations. We will also look into key concepts such as vector and offset writing, particularly when working on dielectric or weakly conductive substrates, to understand how these parameters affect the final pattern quality.
Finally, I will briefly share how we can bridge the gap between the nanoscale and the bulk - which is the focus of my research - specifically, how nanometer-scale structures can be integrated into bulk photovoltaic devices, and the challenges that arise in achieving this integration. The seminar will take us on a journey from the fundamental concepts of EBL to how the technique can be tailored and optimized for specific applications.

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