Area Selective Deposition on EUV Photoresist
Rosanna Robert,¹,² Hunter Frost,¹,² Katie Lutker-Lee,¹ Christophe Vallée¹,²
¹TEL Technology Center, America, LLC 255 Fuller Rd., Albany, NY 12203, USA
²SUNY Poly College of Nanoscale Science and Engineering., 257 Fuller Rd, Albany, NY 12203, USA

Area selective deposition (ASD) is a key process required for the next generation of nanotechnology. ASD utilizes surface chemistry and reaction modifications to promote growth on one of two different materials. When applying an ASD process to a patterned wafer with both materials exposed, we can selectively grow a film on one surface while blocking growth on the other surface (known as the nongrowth area). One application for ASD is ultra-thin extreme ultraviolet (EUV) photoresist repair to enable continued pitch scaling in the Back End of Line (BEOL) [1]. Pattern transfer fidelity depends on initial line edge roughness (LER) and line width roughness (LWR) values of the EUV resist. Moreover, local critical dimension uniformity (LCDU) for <30 nm critical dimension (CD) hole patterning also varies with the initial resist thickness [2]. In this project, we propose to develop an ASD on EUV resists before or alternatively during an etch process to improve LCDU and LER/LWR; in this case, the ASD is used as a corrective step.