

ZABC25

Fundamentals of Nanomanufacturing and Applications

- Module 1: Top-Down Nanoscale Manufacturing Methods
 - Introduction to nanomanufacturing and applications
 - What is top-down nanomanufacturing?
 - Introduction of microelectronics fabrication methods
 - Nanofabrication using various lithography methods
 - Nanoimprinting
- Module 2: Bottom-Up Nanoscale Manufacturing Methods
 - What is the Bottom-up method?
 - Chemical synthesis
 - Supramolecular chemistry
 - Self-assembly
- Module 3: Nanohole Fabrication Using E-beam and Ion-beam Applications
 - Introduction of the E-beam machine used for nanofabrication
 - Possible applications of nanoholes
 - How to make nanoholes by E-beam and Ion-beam
 - Process modeling and simulation
 - Nanohole fabrication practice
- Module 4: Synthesis of Gold Nanorods and Particles-Application
 - Process of synthesizing gold nanorods/ particles using aqueous seeded growth procedures
 - Photon-to-Thermal Conversion Nanosystem
 - Methods used to synthesize gold nanorods
 - How chemical mechanisms control the nanostructures in an aqueous environment
 - Applications of gold nanorods