

Nanoimprint Technology for Biosensing and Metadevices

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Nanoimprint technology is employed to create various nanostructures that are utilized in high-performance biosensors, metadevices, and terahertz devices. This nanoimprint technology, in conjunction with precise dry etching, allows for the production of three-dimensional (3D) nanodevices with multiple layers and unique functions at a high speed, with high uniformity, and with highly controllable dimensions over large areas. These 3D nanostructures are essential for high-performance biosensors and metadevices. In this presentation, 3D biomimetic platforms and plasmonic biosensors will be demonstrated for controlling and monitoring cells and biomolecules with high sensitivity. Platforms with nanostructures are utilized to regulate cell migration behaviors and to separate cancer cells from healthy cells. Furthermore, multiple-layer metasurfaces with twist angles are stacked together using nanoimprint technology to create chiral magic angles for light manipulation. Very high-frequency terahertz lenses and antennas with multiple beam control functions will be shown using curved or metasurfaces.