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Nanotechnology for Biosensing, Meta Devices, and THz Devices

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Nanotechnology is applied to generate various nanostructures for high-performance biosensors, meta devices, and THz devices. Combining nanoimprint with precise dry etching, three-dimensional (3D) nanodevices with multiple layers and unique functions are produced with fast speed, high uniformity, and highly controllable dimensions. In this presentation, 3D plasmonic biosensors will be shown to monitor cells and biomolecules with high sensitivity. Platforms with nanostructures are used to influence cell migration behaviors and separate cancer cells. Moreover, multiple-layer metasurfaces with twist angles will be developed using nanoimprint to form chiral magic angles for light manipulation. Very high-frequency terahertz lenses and antennas with unique beam control will be shown using curved or metasurfaces.