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## Nanostructured Silicon Optical Biosensors: From On-Chip to Paper-Based Diagnostics

Silicon-based optical structures such as interferometers, ring resonators, and photonic crystals hold great promise as low-cost sensor elements in part due to their compatibility with both standard microelectronics processing and standard surface functionalization techniques. The sensitivity of silicon-based optical biosensors is derived from the level of interaction between light and the target molecules to be detected as well as the ability of the sensor to selectively and robustly capture the desired target molecules. This talk will discuss (1) approaches to increase the detection sensitivity of on-chip optical biosensors through the use of subwavelength engineering to increase the light-molecule interaction and (2) the realization of nanoscale porous silicon membrane interferometers on paper-based supports as a new platform for quantitative rapid diagnostic tests with optical readout.

### Topical Area

Biology and life sciences

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