Title: Photonic Crystal Biosensors

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Proposal

Early detection and diagnosis is key to the treatment and management of diseases impacting human health. Further, visualization and recording of living-cell interactions with its dynamically changing chemical and physical environment is critical to the understanding of the causes of diseases, leading to novel drug discoveries and treatment strategies. Super high resolution optical microscopes and biosensors are indispensable requirements to facilitate diagnostics and biomedical research. Despite spectacular advancements in these areas further improvements in terms of resolution, sensitivity, accuracy, and speed is highly desired. Photonic crystals, well known and widely investigated in optoelectronics, is a rapidly emerging technology in biomedical research that holds significant promise for the next generation diagnostic and imaging devices. The sensitivity and precision of these devices largely depend on the design of the photonic crystals which is currently fabricated using expensive techniques. Commercial success of these devices, however, will be possible only if photonic structures with required sensitivity and accuracy can be achieved using low-cost processes.

We invite authors to submit original research and review articles to this special issue in the Journal of Coating Science and Technology, which will help in the design and fabrication of cost-effective photonic crystals broadly benefiting both the optoelectronic and biomedical technologies. Potential topics include, but are not limited to

1. Nanostructured materials for photonic structures
2. Cost-effective processes to fabricate 1D, 2D, and 3D photonic structures
3. Novel advances in photonic designs of biosensors and detectors
4. Advances in photonic crystal imaging

Keywords: Photonic crystal, biosensor, imaging devices, detectors, nanostructure, optoelectronics, cost-effective