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Biosensors for genes, pathogens, parasites, biomarkers and toxins

The cantilever sensors are self-excited devices that exhibit high-order modes near ~0.1-1MHz and show sub-femtogram sensitivity. One significant property is that nonspecific binding is low or absent due to the surface being under constant out of plane oscillation. Several examples of practical importance (*E. coli* O157:H7, biomarkers, waterborne parasites, food and water toxins, and *B. anthracis*) will be illustrated using both antibody-based sensors and specific gene sequence as a molecular identifier without an amplification step. We have developed strategies that reduce error rate at ultralow concentration and also methods that enable direct calibration and quantification. The methods, we have developed allow for eliminating false negatives, a critical performance requirement in bioterrorism, medical, environmental and food safety applications.

Biography

Raj Mutharasan is the Frank A Fletcher Professor of Chemical and Biological Engineering at Drexel University, Philadelphia, PA. Currently, he is the Program Director of Nanobiosensing at the NSF. He is a Fellow of AIChE, Fellow of AIMBE and Fellow of the AAAS. He serves on the Editorial Board of Applied Biochemistry and Biotechnology, *Springer journal*. His research interests include Biosensors and Process Biotechnology. His biosensors research is funded by many federal agencies.

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