

Resonance Phenomenon in Sensing – Only a Matter of Time

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ABSTRACT: The field of micro and nano sensors has rapidly evolved over the last couple of decades with many of the highest performance devices exploiting the phenomenon of resonance for sensing. Micro and nano scale designs, fabrication, and integration of new materials offer unique opportunities for innovative, novel, and robust sensor configurations. Examples of micromachined electromechanical, acoustic, optical, and nanoscale resonator devices will be presented. Resonator based sensors including temperature and infrared sensors, magnetic sensors, and chemical and biological sensors will be discussed. An overview of critical design considerations such as resonator geometry, the Q-factor, and performance advantages of these devices will be presented.



Prof. Srinivas Tadigadapa

BIOGRAPHY: Srinivas Tadigadapa is Senior Vice Provost and a Professor in the Department of Electrical and Computer Engineering at Northeastern University in Boston, USA. From 2018 – 2023 he served as the Chair of the ECE department. From 2000 – 2017 he was a Professor of Electrical Engineering at the Pennsylvania State University. Dr. Tadigadapa's primary research interest is in the interdisciplinary field of microelectromechanical systems (MEMS) and in the design, optimization, fabrication, and testing of MEMS transducers. Specifically, his research focus is on fabrication of novel micro and nano-sensors and actuators by integrating non-traditional materials using silicon microfabrication techniques and exploring phenomenon at the micro-nano interfaces. He has published over 200 peer reviewed papers in the field of MEMS and is the inventor on ten patents. He was awarded the Alexander von Humboldt fellowship in Germany and the Walton fellowship by the Science Foundation of Ireland and is the recipient of the Meritorious Service Award from IEEE Sensors Council. He is a Fellow of the IEEE, The Institute of Physics, London, and a Life-Fellow of the Cambridge Philosophical Society. He was the founding editor of IEEE Sensors Letters.

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