Professor Manas Chandra Ray

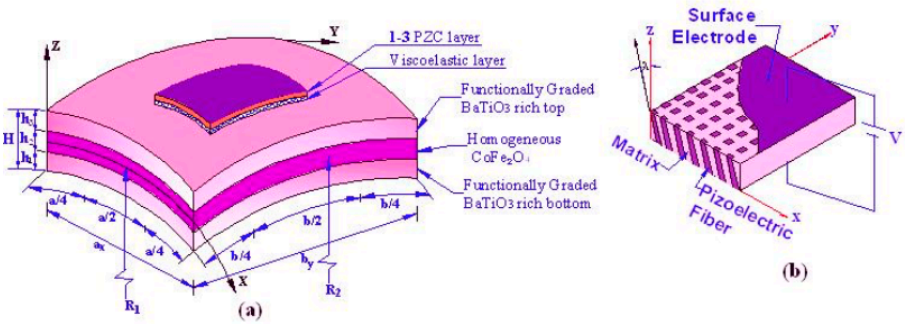

Fig.1 (a) Scamatic diagram of **FGMEE** Doubly curved shell integrated with the **ACLD** treatment (b) 1-3 PZC layer

From: Subhaschandra Kattimani and Manas Chandra Ray, "Control of geometrically nonlinear vibrations of functionally graded multiferroic composite doubly curved shells, Fifth International Congress on Compuational Mechanics and Simulation (ICCMS 2014), December 2014, Chennai, Tamil Nadu, India

See:
http://expert.inae.in/index.php/manas-chandra-ray
http://www1.iitkgp.ac.in/fac-profiles/showprofile.php?empcode=bbmcX&depts_name=ME
https://scholar.google.com/citations?user=5DdMpIUAAAAJ&hl=en
https://www.researchgate.net/scientific-contributions/79437361_M_C_Ray

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Research Interests:
Smart materials and structures; Flexoelectric solids; Dynamics and control of composite structures; Nanocomposites; Fluid-structure interaction; Active constrained layer damping; Fuzzy fiber reinforced composites

Autobiography:
My research activities are devoted to the areas of smart structures, active damping of vibrations, fuzzy fiber reinforced composites, CNT-reinforced composites, flexoelectricity, mechanics of living membrane and quantum dots. I may be the first researcher on smart structures in Europe and Asia. Deriving the exact solutions of intelligent structures is one of my notable contributions in the field of smart structures. The novel methods developed for the active structural-acoustic control and active constrained layer damping of nonlinear vibrations of smart structures using 1-3 piezoelectric composites are also some my novel works in the field of smart structures. Towards the development of new smart composite materials my novel contribution revealed that the piezoelectric coefficients of the existing 1-3 piezoelectric composite are significantly improved by growing radially aligned carbon nanotubes (CNTs) on the surface of the piezoelectric fibers. Use of the wavy CNTs for developing multifunctional CNT-reinforced hybrid nanocomposites is my novel idea. I developed several micromechanics models to authenticate that if the fibers of the polymeric composite are coated with radially grown wavy CNTs, the effective elastic and thermo-elastic properties of the augmented composite called the fuzzy fiber-reinforced composite are significantly improved as compared to those of the composite without

CNTs. Recently, developing micromechanics models, I explored that the thermal conductivities of fuzzy carbon fiber heat exchanger can be dramatically enhanced by exploiting wavy CNTs. Most recently, I published benchmark works on the flexoelectric response of nanobeams for developing smart nano sensors and actuators.

Selected Publications:

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