ME Seminar

Multiscale and multi-physics modeling of flexible nano and continuum rods

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ABSTRACT

Flexible rod-like structures such as nanotubes and nanowires have found significant interest in nanoelectronic applications. Similarly, with the recent advancement in soft robotics and additive manufacturing, an important goal is to optimally design architected rod-like flexible metamaterials and further derive their effective mechanical properties using homogenization techniques. However, modeling such structures as a homogenized continuum rod poses multiscale challenges. Lately, there is also a surge of interest in understanding the motion and deformation of such slender structures in the presence of surrounding fluid or external electric/magnetic field. In this talk, I will touch upon the mechanics challenges faced while addressing the above mentioned problems.

ABOUT THE SPEAKER

Dr. Ajeet Kumar received his PhD in 2010 from the former Dept. of Theoretical and Applied Mechanics at Cornell University after which he had a two-year Postdoctoral stint at the University of Minnesota. Since then, he has been in the Dept. of Applied Mechanics at IIT Delhi where he now serves as Professor.

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