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Mechanics of Cell Interactions with Low-Dimensional Nanomaterials



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Professor Gao's research is focused on the understanding of basic principles that control mechanical properties and behaviors of materials in both engineering and biological systems. He is the Editor-in-Chief of the *Journal of the Mechanics and Physics of Solids*, the leading journal in his field. He has received numerous academic honors, including the Theodor von Karman Medal from the American Society of Civil Engineers in 2017.

Nanomaterials, including various types of nanoparticles, nanowires, nanofibers, nanotubes, and atomically thin plates and sheets, have emerged as candidates building blocks for next-generation electronics, microchips, composites, barrier coatings, biosensors, drug delivery, and energy harvesting and conversion systems. There now is an urgent societal need to understand the biological interactions and environmental impact of nanomaterials, which are being produced and released into the environment by nearly a million tons per year. Professor Gao will discuss mechanics as an enabling tool in this emerging field of study. He will touch on some of the recent experimental, modeling, and simulation studies regarding the mechanisms of cell uptake of low-dimensional nanomaterials and their effects on subcellular vesicles and damage.