

Mechanics and Tribology of Graphene and Related Materials

James Hone

Columbia University, New York

Graphene's tremendous strength (130 GPa) makes it an ideal material for mechanical structures, and also allows the study of materials properties far beyond the equilibrium structure. This talk will describe measurements and theoretical analysis of the mechanics of graphene and related materials such as bilayers/trilayers and hydrogenated graphene (graphane), as well as studies of the Raman spectra (G, 2D, and 2D' modes) of graphene under strain. These properties also influence frictional behavior: monolayer materials display universally larger friction than multilayers.