Near-surface Design to Resist Wear

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The ability to design, control, and fabricate a material with desired surface characteristics has been enhanced due to the advancement of nano- and nanostructured materials. Among lately reported new materials and their applications, wear remains to be one of the most important failure modes in any mechanical systems. The ductile versus brittle behaviour in the subsurface region under sliding contact is among the least understood fundamental concepts. Conventional methodology and theory of investigation reported the possibilities of brittle fracture (surface cracks and subsurface voids) and plastic deformation. Nanowear was simply being downsized from conventional failure found at the meso- and macroscales. In this presentation, we will discuss about current understanding in investigation of wear. New approaches in studying nanowear results in promising future in design and fabrication of nanostructured surface and near-surface materials that possess superior wear resistance.

Brief Bio:

Dr. Hong Liang is Oscar S. Wyett Jr. Professor of Mechanical Engineering and Materials Science and Engineering, Texas A&M University. She has been actively involved in research in nanowear, advanced materials, surfaces, and interfaces. Her current research includes design and fabrication of corrosion and wear resistant materials. Professor Liang is a Fellow of the American Society of Mechanical Engineers (ASME) and a Fellow of the Society of Tribologists and Lubrication Engineers (STLE). She is currently an editor of the Tribology International, and a regional editor of Surface Topography: Metrology and Properties.