DIPARTIMENTO DI MATEMATICA E FISICA "NICCOLÒ TARTAGLIA"

Viscoelastic Material Models in Atomic Force Microscopy Simulations and Measurements

Introduce:

Prof. GABRIELE FERRINI

Università Cattolica del Sacro Cuore

Interviene:

ENRIQUE LOPEZ, George Washington University

Enrique Lopez is currently a PhD candidate from the department of mechanical engineering at George Washington University, in Washington DC, USA. His PhD work focuses on computational simulations in the mechanical response of nanoprobe-stimulated viscoelastic surfaces, and on the application of a variety of contact models to extract material properties from AFM experimental data.

Abstract

Atomic force microscopy (AFM) is currently one of the primary tools for mechanical characterization and topography acquisition of nanoscale surfaces. An important branch of the materials that are nowadays heavily studied at the nanoscale are viscoelastic. Proton exchange membranes, conductive organic polymers, and biological cells, are some few examples of an endless list. It is believed that the performance of these materials -in their final applications- is closely linked to their mechanical properties, therefore the interest in understanding their intrinsic material nature in detail. Although AFM has experienced a rapid development and sophistication of experimental techniques, it is widely known that relating unambiguously measured observables to material properties is not trivial.
This talk will explore the intricacies in exploring viscoelastic surfaces in AFM and the importance in developing physically meaningful models in AFM simulations to narrow the gap between experimental results and accurate quantitative nanomechanical characterization.

Seminario

Venerdì 20 novembre 2015

Sala Riunioni, ore 12.00

Via dei Musei 41 - Brescia

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