

SAIP2013



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PLENARY: Nanomechanical sensing for biology and medicine

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Abstract :

Biological sensing in the mechanical domain provides unique opportunities to measure forces, displacements and mass changes from cellular and subcellular processes. Nanomechanical systems are naturally well matched in size with molecular interactions, and, because of their potential single-molecule sensitivity, they represent the ideal candidates for investigate biological processes at the single molecule and at the single cell levels. During my talk I will treat two important applications of mechanobiology giving a special emphasis to the experimental aspects. In the first part I will introduce atomic force microscopy and force spectroscopy with recent examples of single molecules and single cell force spectroscopy experiments. In the second part I will review the micro- and nano-mechanical approach to molecular biosensing, and finally discuss the recent advances obtained in our laboratory.

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