

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Molecular Mechanics on Graphene Surface and its Detection<sup>1</sup>**

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— In this talk, we demonstrate that the light-induced reversible mechanical motion of an azo-molecule-tethered on graphene can be sensitively detected electronically by motion-induced molecular-gating of graphene (without external gate). The *in-situ* mechanical actuation of the azo-molecule is shown to redistribute the fermionic density *via* due to the change in the proximity of electron-rich benzene moiety of the azo molecule. The results demonstrate that the ultra-sensitive platform offered by graphene makes it possible to electrically detect molecular-scale mechanics. We envision that this research will enable development of next-generation graphene based actuating systems with applications including FETs, optoelectronic-switches and nano-pistons.

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Date submitted: 19 Nov 2010

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