

Abstract Submitted
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Profiling surfaces with a carbon nanotube oscillator¹ ADRIAN POPESCU, LILIA WOODS, University of South Florida, IGOR BONDAREV, North Carolina Central University — A practical device for profiling surfaces is proposed, as an alternative to an Atomic Force Microscopy (AFM) tip. The device consists of a finite length double wall carbon nanotube oscillator with the outer tube being stationary and oriented perpendicular to the surface plane. By investigating the changes in the oscillatory behavior of the inner tube due to the proximity of the surface, the roughness of the surface can be determined. The role of the length and the initial extrusion of the moving tube, and the friction losses in the motion process are also explored. We suggest that such a device can be virtually a non-fatigue, non-wear system, and that it is possible to obtain a higher in-plane resolution as compared to the “traditional” AFM tip.

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