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Electrical Detection of Resonance of ZnO nanowires using Harmonic Detection of Radiation DEEPIKA SAINI, RAMAKRISHNA PODILA, MALCOLM SKOVE, APPARAO RAO, Clemson University — ZnO nanowires exhibit semiconducting and piezoelectric properties making them a technologically promising material. We have measured the mechanical resonance of cantilevered ZnO nanowires using the Harmonic Detection of Resonance (HDR) method.¹ The resonance is induced by an oscillating electric field and detected by second harmonic electric response of the ZnO nanocantilever. The diameter of the nanowires used was about 200 nm and length varied from 60 to 300 μm . Other mechanical properties of the cantilever, such as Young's modulus, are calculated from the observed resonance frequency.

¹J. Gaillard, M.J. Skove, R. Ciocan and A.M. Rao, Rev. Sci. Instrum. 77, 073907(2006)

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