## Abstract Submitted for the MAR08 Meeting of The American Physical Society

Fabrication of a NEMS Resonator Over-shield for Mass Sensing VINCENT T.K. SAUER, NINT, MARK R. FREEMAN, NINT and University of Alberta, WAYNE K. HIEBERT<sup>1</sup>, NINT — The frequency shift of a resonating cantilever or bridge due to mass loading is dependent on the position of the loaded mass on the resonator. Therefore, for the purpose of accurate mass sensing, it is increasingly important to know the exact position of an added mass on a resonating mass sensor. Discussed is a novel technique to build over-shield structures on top of NEMS resonating devices to physically limit the position in which a loading mass can be deposited on a mass sensor. The over-shield is composed of a PECVD silicon nitride film which is supported by a sacrificial aluminum layer. Essentially, this MEMS over NEMS device acts as an integrated shadow mask for the resonator. With this over-shield device the effect of the position of added mass on a resonator is also examined.

<sup>1</sup>NINT is the National Institute for Nanotechnology, 11421 Saskatchewan Drive, Edmonton, AB, Canada, T6G 2M9

Wayne K. Hiebert NINT

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