

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**A versatile technique for fabrication of SiC SPM probes<sup>1</sup>** JOEL THERRIEN, DANIEL SCHMIDT, SHEETAL BARROT, BHAVIN PATEL, U. Massachusetts-Lowell — To date SPM probes have largely been fabricated via methods borrowed from the semiconductor industry for fabricating Micro Electro Mechanical Systems. Although these techniques have enabled SPM to see widespread use, the processes put significant limitations on what structures can be made. We report our progress on fabricating SPM cantilevers composed of Silicon Carbide using polymer molding techniques. A pre-ceramic polymer is molded into the desired probe shape and then converted to SiC via pyrolysis. We will also report on progress in using photo-sterolithography for fabrication of even more complex geometries. In addition to opening up a much larger set of probe structures, the use of SiC leads to improved wear resistance of the resulting probes. Among the potential applications, this method enables the fabrication of low spring constant, high resonant frequency cantilevers via cross sectional geometries not accessible to standard fabrication techniques. Such probes are required for high speed tapping and non-contact imaging.

<sup>1</sup>Seed funding provided by the NSF supported Center for High-rate Nanomanufacturing at UML

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Date submitted: 24 Nov 2007

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