Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Dielectric Modification of the Casimir force between a gold sphere and a silicon surface FENG CHEN, UMAR MOHIDEEN, Department of Physics, University of California, Riverside, CA 92521 — The Casimir force (retarded van der Waals force) can become very large at micron and nano distance scales and can affect the performance and fabrication of microelectromechanical (MEMS) and nanoelectromechanical systems (NEMS). Here we demonstrate that it is possible to modify the Casimir force in the microelectromechanical systems, through alteration of the dielectric properties of the silicon boundary. This will open new opportunities for the application of the Casimir force in MEMS and NEMS. This experiment also helps improve our understanding of the Casimir force between dielectric surfaces.

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Date submitted: 01 Dec 2005 Electronic form version 1.4