Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

SERS Characterization of Self-Assembled Monolayers Embedded on Plasmonic Nano-structure MASATO MAITANI, Materials Science and Engineering, Penn State University (Penn State), DOUGLAS OHLBERG, Information & Quantum Systems Laboratory, Hewlett-Packard Laboratories, Palo Alto, CA (Hewlett-Packard), HAEYOUNG YOON, Electrical Engineering (Ee), Penn State, PING KAO, Ee, Penn State, DEMIREL MELIK, Engineering Science and Mechanics, Penn State, ZHIYONG LI, DUNCAN STEWART, STANLEY WILLIAMS, Hewlett-Packard, THERESA MAYER, Ee, Penn State, DAVID ALLARA, Chemistry, Penn State — We discuss Raman spectroscopic analysis of self-assembled monolayers embedded in two different types of nano-structures capable of sustaining localized surface plasmon-surface plasmon polariton coupling via nanoscale gaps and curved surface features. Both structures cosnsist of metal-molecule-metal (M^3) junctions which can also allow charge transport through the molecular bridges. Our results indicate different electromagnetic and charge transport characteristics as a function of the top metal-molecule chemical interaction. We also report direct correlations between charge transport states, SERS response and inelastic vibrational scattering in selected M^3 molecular electronic device junctions.

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Date submitted: 03 Dec 2008 Electronic form version 1.4