Abstract Submitted
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"Nanocavity" Biochemical Sensor[1] T. KIRKPATRICK, J.I. OH, P. DHAKAL, D. CAI, H.Z. ZHAO, A. CIMENO, L. REN, K. KEMPA, Z.F. REN, T.C. CHILES, M.J. NAUGHTON, Boston College — A biochemical sensor, based on a coaxial "nanocavity," is described. The sensor is capable of detecting small changes in complex impedance, resulting from the presence of target entities in, and near, the device. Its nanoscale dimensions can be tuned for size-specificity, and its constituent components functionalized, for biochemical specificity. The measured capacitance of the bare sensor is in good agreement with calculations for a parallel array of $10^6/\text{mm}^2$ vertically orientated coaxial capacitors. Here, changes in the complex impedance of the sensor are reported in the presence of various organic solvents. Molecules entering the coax annuli result in a significant change in impedance as a function of time, frequency and concentration.

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