GEC09-2009-020086

Abstract for an Invited Paper
for the GEC09 Meeting of
the American Physical Society

Opportunities at the Confluence of Microplasma and Nanomaterials

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More than a decade ago, plasma science ventured into the mesoscopic realm with low temperature, nonequilibrium plasmas confined to cavities having a characteristic dimension (d) below 50 μm. today, the lower limit for microplasma dimensions is d $\precsim 10\mu$m but experiments in which d approaches 1 μm are expected in the near future. Several previous microplasma devices have exploited nanomaterials and nanostructures to realize new functionality. This presentation will briefly describe past efforts to integrate microplasmas with nanomaterials and/or nanodevices. A few thoughts regarding exciting opportunities in merging nanoelectronics or nanoptics with $\leq$ 1-10 μm microplasmas will be offered.