Abstract Submitted
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HgSe Semiconductor Nanoclusters in Zeolite[1] A.M.M. ABEYKOON, University of Houston, E.A. ANOKHINA, MIGUEL CASTRO-COLIN, W. DONNER, A.J. JACOBSON, SIMON C. MOSS — Our primary challenge has been to produce HgSe semiconductor nanoclusters with a precise, controllable and narrow size distribution. Since a zeolite framework constrains the size and shape of species encapsulated within a pore, we use zeolite pores to contain our nanoclusters. Two different zeolite frameworks, Linde type L (tubular pore) and Faujesite (nearly spherical pore) are used in our study. Elemental Hg and Se are embedded into dehydrated zeolite cavities via vapor phase deposition. The AXS (Anomalous X-ray Scattering) technique is used in combination with the PDF (atomic Pair Distribution Function) technique to solve for the structure of the nanocluster. Optical absorption measurements are used to determine the band gap of the cluster. We intend to perform Raman Spectroscopy to complement our determination of local structure and to probe the electronic properties of the semiconductor nanoclusters. AXS and PDF data sets were collected at X7A beam line at the NSLS. Optical measurements were carried out in the UH Chemistry Department. Currently we are analysing our x-ray data sets to yield a successful model for the nanoclusters.

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