355. NANOCRYSTALLINE SEMICONDUCTORS IN NANOCHANNEL GLASS ARRAYS.
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        We report on two methods for depositing nanocrystalline semiconductor material into nanochannel
glass (NCG) arrays. Both methods are general and should be applicable to a variety of semiconductors.
The first method employs CVD techniques to deposit GaN into the nanochannel glass resulting in a
periodic array of polycrystalline wires with high aspect ratios. The second method involves the deposition
of soluble semiconductor nanocrystals such as CdSe and InP from solution into the NCG arrays. This
method can allow for the control of the amount of material deposited into the arrays and we have made
progress in obtaining a high fill fraction of nanocrystal material in the channels. The structures are
characterized using optical and electron microscopies. These composite structures have the potential to
exhibit interesting photonic band gap effects while the NCG also provides an excellent template for
ordering quantum confined materials into a macroscopic array.

356. NEAR-FIELD AND CONFOCAL SCANNING SPECTROSCOPY/MICROSCOPY OF PORPHYRIN WHEELS
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        ** K.U.Nijmegen, Dept. of Chemistry, Toernooiveld 1, NL-6525 ED Nijmegen, The Netherlands
        Schenning, et.al. recently reported the preparation of a unique type of self-assembly,
        comprised of certain porphyrin compounds, and in the shape of a ring with a diameter
        in the micron range and a ring height and width on the order of tens of nanometers.
        These wheel-like molecular aggregates are related to ring-shaped molecular aggregates
        known to occur in nature, e.g. in the bacterial light-harvesting complex, LH2. This
        paper is concerned with a detailed microscopic investigation of porphyrin wheels by
        confocal visible-near-IR fluorescence microscopy and fluorescence scanning near-field
        optical microscopy and scanning force microscopy. These methods are used to study the
        spatially resolved fluorescence and absorption spectra, including measurements with
        polarized light and polarized detection. The results offer insight into several
        aspects of the structure and photophysical dynamics of the rings, the degree of
        molecular order and orientations.

357. PERCOLATION TRESHOLD FOR EXCHANGE NARROWING IN SODIUM-
        DOPED SODIUM BROMO SODALITE. V. I. Srdanov. P. Sieger and G. D.
        Stucky, Department of Chemistry, University of California at Santa Barbara, Santa
        Barbara CA 93106

        A solid solution of paramagnetic [(Na+)^4(x)(e')]x and diamagnetic [(Na+)^4(Br^-)]1-x
        (0<x<1) clusters was synthesized in order to study percolation threshold for exchange
        interaction in sodalites. The x=0.05 stoichiometry produces a 13 peak EPR signal while
        the x=0.15 shows an additional narrow resonance (FWHM = 2G) that was previously
        atributed to metallic sodium clusters. Our studies show that the narrow resonance is due to
        exchange interaction among electrons associated with Na4^3+ clusters in neighboring
        sodalite cages. Highlights of power-dependent and temperature-dependent EPR studies
        will be presented.

358. PHOTOELECTRON SPECTROSCOPY OF METALLOCARBOHEDRENES M8C12- (M=Ti, V, Cr,
        Zr, Nb)*. San Li, Hongbin Wu, Xi Li, Chuanfan Ding, and Lei-Sheng Wang, Department
        of Physics, Washington State University, Richland, WA 99352 and Environmental Molecular
        Sciences Laboratory, MS K2-14, Pacific Northwest National Laboratory, Richland, WA 99352

        Photoelectron spectroscopy experiments have been performed on five metallocarbo-
        hedrene (met-car) anions, TiC8C12-, V8C12-, Cr8C12-, Zr8C12-, Nb8C12-. These met-car anions
        were produced by two different methods. We found that the Ti and Zr met-cars show unusually
        low electron affinities (EAs) and that the EAs increase from Ti to Cr met-cars. The observed
        photoelectron spectra and the electronic structure of the met-cars are interpreted using existing
        theoretical calculations.

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