

Abstract Submitted  
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**Near Edge X-ray Absorption Fine Structure Studies of Cu Ion-Containing PAMAMOS Dendrimer Networks** ROBERT BUBECK, PETAR DVORNIC, Michigan Molecular Institute, DANIEL FISCHER, NIST — There is continuing interest in the development of nanocomposites containing metal ions based on the use of dendrimers as the host matrix. One may utilize functionalized dendrimer interiors to complex the added constituent and serve as a template for the organization of the resulting nanoscale structures. Potential applications of include: catalysts, biotechnology, functional membranes, molecular sensors, etc. We report on recent results obtained using near edge X-ray absorption fine structure (NEXAFS) to characterize Cu(2+) covalent interactions in three-dimensionally cross linked dendrimer networks. These networks were made from radially-layered poly(amidoamine-organosilicon), PAMAMOS, dendrimers having generation 4 (G4) polyamidoamine (PAMAM) interiors surrounded by one layer of organosilicon, OS, exterior branch cells. Lower generation homologues (i.e., G1 through G3) were also examined on a more limited basis. The nitrogen and carbonyl moieties contained in the PAMAM dendrimer interior were shown to be highly interactive with metallic cations, in large measure because of the dendrimer geometry. Similar measurements on chemically similar but much less physically constraining hyperbranched polymers indicated very limited interaction with the amine and carbonyl moieties.

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