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**High-Energy X-Ray Diffraction PDF Study of a Novel Class of Supermicroporous Alumina/Silica/Manganese Materials.** Lev N. Zakharov<sup>1</sup>, Boris G. Shpeizer<sup>1</sup>, Abraham Clearfield<sup>1</sup>, Aysel Sartbaeva,<sup>2</sup> Simon Billinge<sup>3</sup>, <sup>1</sup>Dept. of Chemistry, Texas A&M Univ., P.O. Box 30012, College Station, TX 77842-3012, <sup>2</sup>Dept. of Physics and Astronomy, Arizona State Univ., P.O. Box 871504, Tempe, AZ 85287-1504, <sup>3</sup>Dept. of Physics and Astronomy, Michigan State Univ., East Lansing, MI 48824-2320.

The structure of amorphous supermicroporous Al/silica/Mn materials with different concentrations of Al and Mn were studied by the high-energy X-ray diffraction atomic pair distribution function (PDF) method. Experiments were carried out with the BESSRC/XOR 11-ID-C and 6ID-D MUCAT beamlines at the Advanced Photon Source (APS), Argonne National Laboratory. The PDF data indicate that at low Al concentrations, Al atoms substitute for Si in the framework, and at high Al concentrations, a longer-range ordered Al/Mn-oxide structure is formed. Comparison of our PDF data with the PDF profiles for pure silica and, from single crystal structures of Mn,Si,O-complexes, indicates the existence of the Si-O-Mn and Al-O-Mn fragments in the material structure, suggesting that the Mn is incorporated into the bulk structure.