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Structure of Boron Carbide: Where's the Carbon? DAVID MARX[1], Illinois State University, GERALD SEIDLER, TIMOTHY FISTER, KENNETH NAGLE, University of Washington, CARLO SEGRE, Illinois Institute of Technology — Although the structure of the boron carbide series, $B_{12-x}C_x$ with $0.06 \leq \quad x \quad \leq 1.7$, has been studied since the 1940s, the location of the carbon atoms has not been adequately determined. The recent development of the lower energy resolution inelastic x-ray scattering (LERIX) spectrometer on the PNC-CAT beamline at the Advanced Photon Source at Argonne National Lab has enabled differentiation of the boron and carbon absorption edge data for the various crystallographic sites. The structure (R-3m) consists of twelve-atom icosahedra and three-atom chains. Boron carbide may have a maximum of three carbon atoms, which may be located on the two end of chain sites and in one of two inequivalent sites on the icosahedra. At least one carbon atom must be present in the structure for it to be stable. In this presentation, structural results from non-resonant x-ray scattering for seven samples, ranging from B_4C to $B_{10.1}C$ will be presented.

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