A Search for Novel Superconductors: A Study of the Lithium-Boron System

MICHAEL BLEIWEISS, Naval Academy Preparatory School, Newport, RI, JAFAR AMIRZADEH, Morris College, Sumter, SC, MING YIN, Benedict College, Columbia, SC, DOUGLAS KIRVEN, Sigma-K Corp, Durham, NC, ED SHARP, TIMIR DATTA, University of South Carolina, Columbia, SC — A rapid solid-state reaction was used to synthesize a class of novel lithium-boron based ceramics. The resulting multiphase ceramic materials were investigated by XRD, electron microscopy (SEM) and EDAX. Efforts were taken to avoid contamination by magnesium diboride; MgB$_2$ was not detectable by XRD or EDAX. A number of the samples were electrically conducting and some were found to be superconducting in the 30-40 K range. Superconducting transitions were confirmed by SQUID magnetometry. Efforts are in progress to identify and isolate the superconducting phase. Influence of preparation on the electrical conductivity and superconductivity will be reported.

Michael Bleiweiss
Naval Academy Preparatory School

Date submitted: 30 Nov 2005

Electronic form version 1.4