

Abstract Submitted  
for the OSF10 Meeting of  
The American Physical Society

**Photoemission of Doped Lithium Tetraborate Crystals Being Developed for Neutron Dosimetry** CHRISTINA DUGAN, ROBERT HENGELHOLD, STEPHEN MCHALE, JOHN MCCLORY, JAMES PETROSKY, AF Institute of Technology — Lithium tetraborate or LTB crystals are being developed for possible use in solid state neutron detectors. Already used in thermo luminescence dosimeters, LTB is of interest due to its large cross section for neutron capture by lithium and boron. The reaction between lithium and a neutron produces an alpha particle and tritium. When boron interacts with a neutron an alpha particle and lithium are produced. These reactions are the basis for neutron detection, and an LTB crystal enriched with Mn should show improved efficiency for neutron detection. There is, however, a lack of fundamental characterization information regarding this useful material, particularly with regard to its electronic configuration. In this study, photoemission spectroscopy has been used to determine the energy level structure of manganese doped Lithium Tetraborate crystals. Measurements were made using UV photons from the storage ring of the synchrotron at Louisiana State University. Comparison will be made between Mn doped LTB crystals and undoped crystals.

Robert Hengehold  
AF Institute of Technology

Date submitted: 14 Sep 2010

Electronic form version 1.4