Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Characterization and Removal of Deposited Surface Contamination on Materials for Use in Low-Background Environments ALEX LARSON, MUHAMMAD KHIZAR, DONGMING MEI, University of South Dakota, CUBED COLLABORATION — Materials used in Low-Background experiments, such as PTFE and Germanium crystals, require high levels of cleanliness to avoid false positives and noise in experiments. The storage and standard process of preparing these materials for use causes this contamination, such as organic material from photoresist treatment of germanium samples or dust from the environment. The purpose of this study is to determine the most effective way to remove these surface contaminants from the materials through the development of certain procedures for use with each material. The procedures use a combination of treatment techniques involving the use of acids, bases, oxidizers, and solvents. These different procedures target certain contaminants, such as removing surface grease and oxidizing and removing organic films. Testing the different procedures with contaminated samples of material and analyzing the result yields the most cost and time effective methods for cleaning these materials. The number of particles counted on the surface before and after the cleaning procedure determines the effectiveness of the procedure for a given material. In this project I have discovered a method that can reach near 100% particulate removal from PTFE for levels of contamination from a normal lab environment.

Alex Larson
University of South Dakota

Date submitted: 31 Jul 2013 Electronic form version 1.4