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Chemical purification of some lanthanides from radioactive elements for low-background experiments

Abstract

Low-background experiments to search for rare processes require very low, ideally zero level of radioactive contamination. The most dangerous contaminants are radioactive elements uranium, thorium, radium, potassium, actinium, rubidium, lanthanum, lutetium, while transition elements decrease quality of scintillation detectors. There are no commercially available compounds with the required and specified levels of radioactive contamination. Even commercial high purity grade materials have to be additionally purified.

There are a lot of industrial techniques of rare elements separation, however, one need to develop specific approaches to remove radioactive impurities. On the seminar I will describe some methods for purification of cerium, neodymium, samarium, erbium and ytterbium from radioactive elements, particularly interesting from the point of view of double beta decay experiments.

August 4, 2016 - 2:30 pm
LNGS - "B. Pontecorvo" room