

A study of cryogenic Li_2MoO_4 phonon-scintillation detectors for AMoRE-II

We studied phonon and scintillation properties of Li_2MoO_4 crystals for the AMoRE-II (Advance Molybdenum based Rare process Experiment - phase II), an experiment aiming at detecting neutrinoless double beta decay of ^{100}Mo . Li_2MoO_4 is one of promising crystal candidates among molybdate crystals containing Mo element for a simultaneous detection of heat and light signals at mK temperatures. It is advantageous to use the crystal in terms of crystal growth and internal background control. We tested Li_2MoO_4 crystals in a low-temperature detection system for high resolution phonon-scintillation measurement based on a metallic magnetic calorimeter (MMC) readout technology. We will present tests results of the Li_2MoO_4 crystals as target material and discuss a feasibility for the large scale experiment, AMoRE-II, with about 200 kg of molybdate crystals.

Primary authors: Ms KIM, Hyelim (Kyungpook national university); Dr KIM, Yong-Hamb (Institute for Basic Science)

Co-authors: Prof. KIM, Hongjoo (Kyungpook national university); Dr SO, Jungho (IBS); Dr LEE, Minkyu (KRISS); Dr LEE, Moo Hyun (IBS)

Presenter: Ms KIM, Hyelim (Kyungpook national university)