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Purification of 100MoO3 powder for AMoRE-II crystals' synthesis

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AMoRE is a series of experimental searches for the neutrinoless double beta decay of 100Mo using molybdate-based crystals, such as 40Ca100MoO4 and Li2100MoO4. AMoRE phase-II aims to use 400 bolometric crystals that contain a total of 120 kg of enriched 100Mo with an internal radioactivity background level that is below 5⊠10-6 count/kg/keV/year in the region of interest. To reach this level of purity, background levels of radioactive contaminants from thorium and uranium chains in the materials used for the crystal production must be reduced to below ⊠Bq/kg. This work will describe the purification method and technology for mass production of low-radioactive, high-purity 100MoO3 powder for the AMoRE-II crystals. We will present results from ICP-MS and HPGe array analyses of the purified powders that confirm the effectiveness of the radioactivity reduction.

Submitted on behalf of a Collaboration?

No

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