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Purification of CaF_2 crystal for double beta decay experiment

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We report on inorganic crystal purification for double beta decay and cosmic dark matter search;
focusing on the NaI(Tl) and CaF_2 crystals.
The NaI(Tl) crystal will be applied to search for cosmic dark matter, verifying the annual modulating signal reported by DAMA/LIBRA collaboration.
The CaF_2 crystal will be applied to search for the neutrino-less double beta decay of ^{48}Ca.

We have established a method for purifying NaI (Tl) crystals and succeeded in purifying the concentrations of uranium-series, thorium-series, and potassium to below the target concentration.
We will discuss the reproducibility of our purification method and prospect.

We are working on the purification of CaF_2 crystal, which is made from water-insoluble raw materials. CaF_2 is a crystal used to search for the double beta decay of ^{48}Ca.
The goal of the purity in this crystal is as low as 1 μBq/kg or less.

We measured the impurities in the crucible and CaF_2 powder before we made a molten product of the CaF_2.
We will consider the correlation between the purity contained in the materials around the crystal growth and the purity of the molten product.
The material selection policy and prospects for large volume detector system will be discussed.

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