

Sodium Iodide (NaI) Purification for Searching on Dark matter for the COSINE

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Content

The COSINE collaboration has developed low-background NaI crystals for searching for dark matter. The sensitivity of the experiment is limited by the radioactive background inside the crystal. Therefore, purification of raw powder is essential to grow the low-background of NaI crystal. Recrystallization method is one of the purification technique of powder based on different solubility at different temperature. Recrystallization method was used to remove the natural radioactive isotope impurities from NaI powder. Content of impurities in initial and purified NaI powder was measured by Inductively Coupled Plasma Mass Spectrometer (ICP-MS) analysis. This method has shown effective removing of the impurities, such as K, Pb and etc., in the initial NaI powder.

Summary

The recrystallization method had shown effective removing of the impurities, such as Ba, K, Pb, and Sr in the initial NaI powder. In this time, this study is ongoing to improve the decontamination factor and recovery efficiency.

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