

Abstract Submitted
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Evaluation of Storage Oil Moisture Content for Strontium Iodide and other Hygroscopic Crystals¹ NADIA FRANCIS, EMMANUEL ROWE, PIJUSH BHATTACHARYA, BRANDON GOODWIN, VLADIMIR BULIGA, Fisk University, KEIVAN STASSUN, Vanderbilt University, ARNOLD BURGER, Fisk University, Vanderbilt University — Many of the existing high performance inorganic scintillators are hygroscopic and are typically stored in oil to avoid interaction with moisture. However, it has been found that over time crystals stored in oil deteriorate due to moisture within the oil. The goal for this research project is to measure the moisture content in light mineral oil, heavy mineral oil, silicone oil, and paraffin oil typically used to store crystals, as well as to analyze the effect of these various types of oil on the optical transmission of strontium iodide crystals. To measure moisture content in the oils, a Water Test Kit from Sandy Brae Labs was used with a modified procedure to insure saturation. A treatment was developed to significantly reduce the innate moisture in oils. Heavy mineral oil was found to have the lowest innate moisture content, but with the use of the developed oil treatment, the moisture content of light mineral was reduced by 86% to a final value of 18 ppm. This study is still in progress and future work includes evaluating the effects of the oil on the crystals. Based on preliminary results, it appears that the treated light mineral oil will cause the least amount of deterioration in the crystal's optical transmission.

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