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Characterization of KAP and RbAP Crystals Using Soft X-Rays for NIF Opacity Spectrometer[1] ALICE DURAND, R. LARA, EC DUTRA, MS WALLACE, RA KNIGHT, JM HEINMILLER, Nevada National Security Site, RF HEETER, J EMIG, Lawrence Livermore Natl Laboratory, T ARCHULETTA, TS PERRY, K FLIPPO, TJ URBATSCH, Los Alamos Natl Laboratory — Accurate characterization of the Opacity Spectrometer (OpSpec) crystals is paramount in ensuring high-quality data from soft X-ray opacity experiments performed at the National Ignition Facility (NIF). Such data addresses the discrepancy between opacity theory and experiments. The Henke X-ray diffractometer at the Nevada National Security Site is being used for high-fidelity crystal characterization. The procedure provides detailed crystal spectra, accommodating a range of different tests, for advances in crystal and spectrometer design. Potassium acid phthalate (KAP) and rubidium acid phthalate (RbAP) crystals are typically characterized at operating voltage and current of 2.5 kV, 15 mA or 15 kV, 20 mA. Image plates are used to record the spectra and are used for identification of crystal defects both before and after NIF shots. Further characterization improvements are underway regarding crystal shape, anode choice, and analysis procedure.

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