

**Title:**

ISS NL inorganic salt crystallizations by solution evaporation and cooling

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**Abstract**

A six-member group of high, middle, and home-schooled students ages 12–17 designed apparatuses and protocols for crystallization of  $KAl(SO_4)_2 \cdot 12H_2O$  and  $KH_2PO_4$  aboard the International Space Station. Crystals are obtained by cooling saturated alum solutions from 20°C to 4°C for one week. Crystals of KDP are produced over the course of three weeks inside a two-chamber apparatus. One chamber contains a saturated solution of KDP, the other a desiccant, and the chambers are separated by a semipermeable membrane made of PTFE or Gore-Tex. The crystal quality is compared to that of the respective crystals obtained during the ground control experiments. The results of the physical characterization and X-ray structural analysis of the crystals obtained in microgravity are compared and contrasted with the expected outcome. Organization and technical details as well as educational impact of this scientific outreach activity are discussed.