

## High-purity scintillating $\text{CaWO}_4$ crystals for the direct dark matter search experiment CRESST

The direct dark matter search experiment CRESST (Cryogenic Rare Event Search with Superconducting Thermometers) uses scintillating  $\text{CaWO}_4$  single crystals as targets for possible nuclear recoils induced by Dark Matter particles. An intrinsic radioactive contamination of the crystals as low as possible is crucial for the sensitivity of the detectors. In the past  $\text{CaWO}_4$  crystals operated in CRESST were produced by institutes in Russia and Ukraine. Since 2011  $\text{CaWO}_4$  crystals have also been grown at the crystal laboratory of the Technische Universität München (TUM) to better meet the requirements of the CRESST experiment. The radiopurity of the raw materials and of first TUM-grown crystals was measured by ultra-low background  $\gamma$ -spectrometry. TUM-grown crystals were also operated as low-temperature detectors at a test setup in the Gran Sasso underground laboratory as well as in the CRESST experiment itself. These measurements were used to determine the crystals' intrinsic  $\alpha$ -activities. The total  $\alpha$ -activities of TUM-grown crystals as low as  $1.23 \pm 0.06$  mBq/kg were found to be significantly smaller compared to those of crystals grown at other institutes. The new generation of TUM-grown crystals is produced using recrystallization and low-speed growing.

**Primary author:** MOKINA FOR THE CRESST COLLABORATION, Valentyna (HEPHY)

**Presenter:** MOKINA FOR THE CRESST COLLABORATION, Valentyna (HEPHY)

**Session Classification:** Poster Session B

**Track Classification:** Dark matter and other low-background experiments