Growth and the investigation of TGSP crystal properties as infrared detector

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Abstract: Triglycine sulfate, TGS, and its phosphated counterpart, TGSP, have been grown by saturation solution method and were investigated for growth conditions and crystallographic parameters. Structural analysis equipments such as X-ray diffraction and back-scattering laser micro-Raman spectroscopy have been employed for the investigation of the grown crystals and the experimental results obtained for the pure TGS and doped TGSP crystals are presented. We place great emphasis on the influences of the orientation of the seed crystal and also phosphoric acid addition to the quality of the final grown crystals and the changes in the polarization has been studied by using a special electrical circuit and recording the hysteresis loops of the pure and doped crystals.

Keywords: crystal growth, pyroelectric, triglycine sulfate, phosphoric acid, coercive field, hysteresis loop.