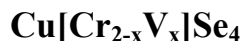


X-RAY ANALYSIS OF THE POLYCRYSTALLINE COMPOUNDS



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The polycrystalline $\text{Cu}[\text{Cr}_{2-x}\text{V}_x]\text{Se}_4$ compounds (where $x = 0.1, 0.25, 0.5, 0.75$) were obtained using ceramic method from the high purity elements.

The chemical composition of the crystals was determined using energy-dispersive X-ray spectrometry (EDXRF). The compounds were powdered and pressed into pellets with liquid binder (polyvinylpyrrolidone/methylcellulose solution). The samples were excited by the air-cooled X-ray tube with Rh target. The X-ray spectra from the samples were collected by thermoelectrically cooled Si-PIN detector with resolution of 145 eV at 5.9 keV. The quantitative analysis was performed using fundamental parameters method. The determined concentrations were in good agreement with the expected values

Powder diffraction data were collected on X'Pert PRO X-ray diffractometer with PIXcel ultra fast line detector, focusing mirror and Soller slits for Cu $K\alpha$ radiation. The diffraction patterns were collected at room temperature in transmission mode and in Bragg-Brentano geometry in the range of $5^\circ \leq 2\theta \leq 120^\circ$ using step scans of 0.026° . The peak profiles were fitted with the pseudo-Voigt function. The X-ray structure analysis showed that the compounds are the cubic spinels with normal cation distribution. The observed small deviations of the anionic positional parameter from the ideal value of 0.250 signal some distortions of the selenium sublattice.