

Short Communication

On Structural and Magnetic Properties of $V_{1-t}Co_tAs$ INGER LISE ANDREASSEN, KARI SELTE
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During the course of the present research programme all but one of the pseudo-binary $TAs-T'As$ (T, T' : V, Cr, Mn, Fe, Co) systems with MnP type structure have been studied and reported in this journal. An account of the lacking VAs—CoAs system is given here.

Experimental details concerning purity of elements, preparation of binary and ternary samples (2–4 heat treatments at 600–900 °C for one week, quenching or slow cooling to room temperature), powder X-ray diffraction and magnetic susceptibility measurements are as in Refs. 1 and 2.

Homogeneity ranges and atomic arrangement. An isothermal cross-section of the VAs—CoAs system, as derived for samples quenched from 600 °C, shows (Fig. 1) that this system exhibits a miscibility gap for $0.15 \pm 0.03 \leq t \leq 0.80 \pm 0.03$ of the formula $V_{1-t}Co_tAs$. The limits of the solubility ranges have been determined from the variations in unit cell dimensions with t (Fig. 1) and ascertained by application of the

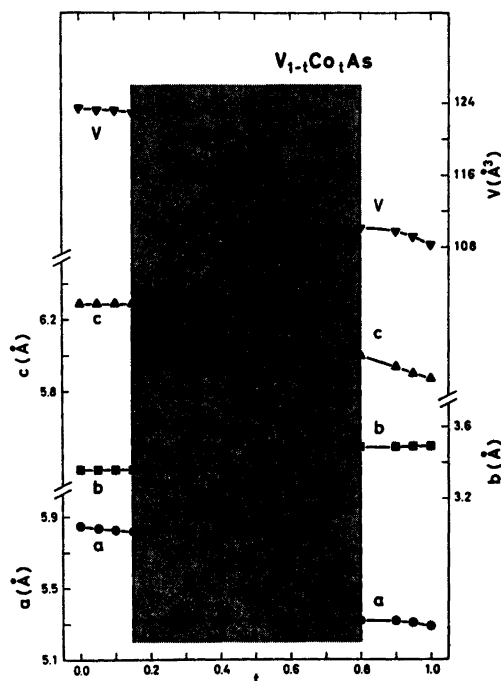


Fig. 1. Room temperature unit cell dimensions of $V_{1-t}Co_tAs$ as functions of t .

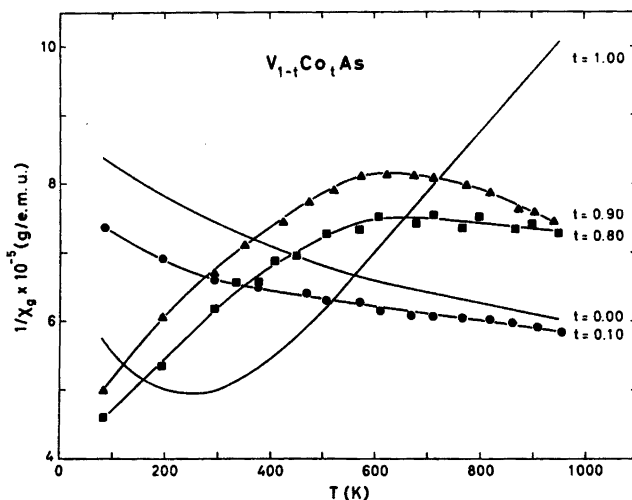


Fig. 2. Reciprocal magnetic susceptibility versus temperature for $V_{1-t}Co_tAs$ samples.

disappearing phase principle to the X-ray data. The diffraction data show that the V and Co atoms are randomly distributed over the metal sub-lattice in an MnP type atomic arrangement.

Magnetic susceptibility. The temperature characteristics of the reciprocal magnetic susceptibility show a consistent trend in their changes with the composition parameter t (Fig. 2). None of the curves satisfies the Curie-Weiss Law, and values for the paramagnetic moment can accordingly not be deduced.

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