ESRF	**Experiment title:** Powder X-ray diffraction study of the transition metal monogermanides	**Experiment number**: 01-02-1030
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Report:

In order to study possible structural response on magnetic ordering in transition metal monogermanides, powder x-ray diffraction curves for $Mn_xFe_{1-x}Ge$ with the concentration x=1, 0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2 and 0.1 were obtained. We used a cryostream to cover the temperature range 80-500 K. Excellent quality of collected high-resolution powder diffraction patterns (see Fig. 1) allows us to to reach the goals of the proposal and also uncover a few more unexpected structural features. An example of the typical powder diffraction pattern for $Mn_{0.5}Fe_{0.5}Ge$ at T=200 K is shown in Fig.1. The inset of Fig. 1 shows two peaks (120) for MnGe at T=80 and 500 K which were referred to have a maximal broadening due to the phase transition. To get the coincidence the peak at T=80 K is shifted left by -0.1454^0 and scaled by factor of 1.0874. It is clearly seen that there is no a phase transition between these two temperatures.

The temperature evolution of the unit cell parameter *a* normalized on the value of *a* at T=80 is shown of Fig. 2. The inset shows the Fe concentration *x* versus the low temperature lattice parameter a_0 at T=0 K obtained from the Debay law, with crosses indicating compositions expected from the Vegard law.

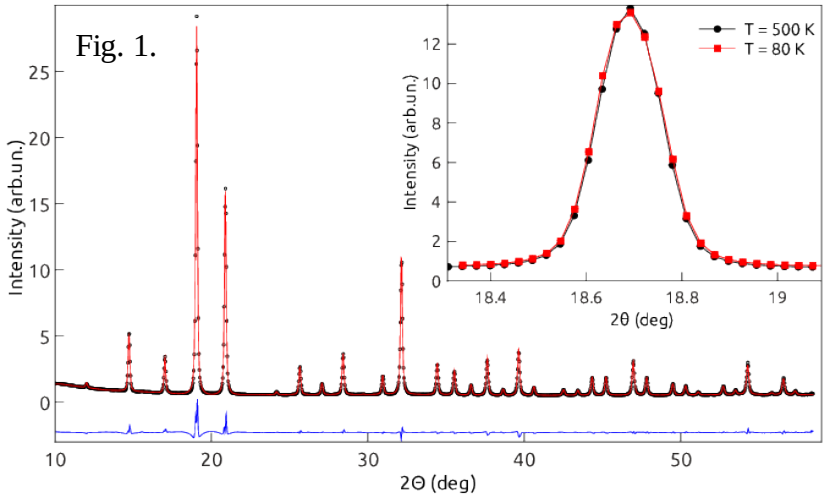

Fig. 1.

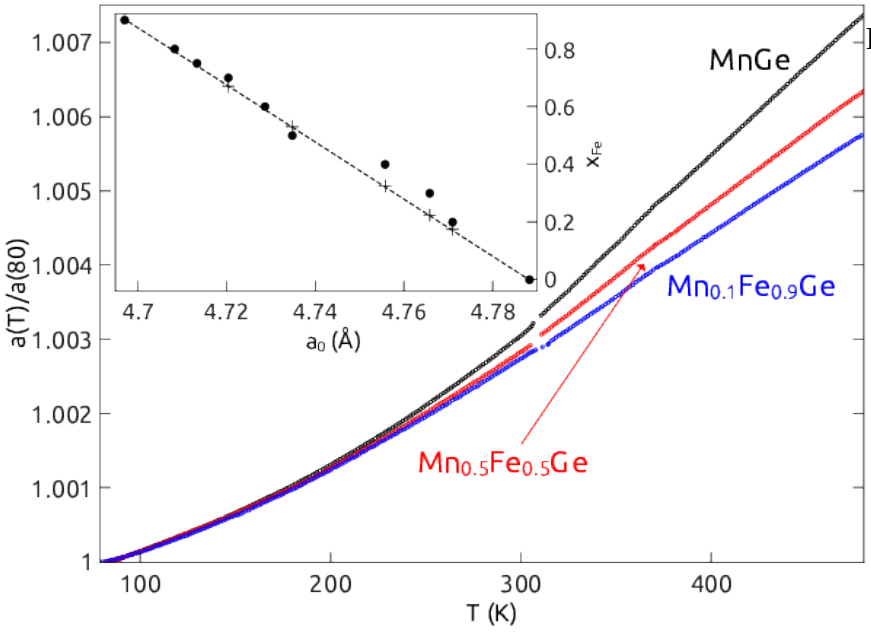

Fig. 2.

The results are scheduled for publication in the August 2014 issue of Acta Crystallographica Section B (Volume 70, Part 4).