



	<b>Experiment title:</b> <b>Powder X-ray diffraction study of the transition metal monogermanides</b>	<b>Experiment number:</b> HC1054
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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  $\text{Mn}_x\text{Co}_{1-x}\text{Ge}$  with the concentration  $x$  being equal to 1, 0.4, 0.6 and 0.05 were obtained. We used the cryostream in combination with a nitrogen blower to cover the temperature range 80-400 K. Excellent quality of collected high-resolution powder diffraction patterns (see Fig 1) allows us to reach the goals of the proposal and also uncover a few more unexpected structural features. In particular, some of the compositions are found to have a bimodal distribution of Bragg intensities (Fig 2), that may correlate with their magnetic response. A complete analysis of the data collected is in progress; the results will be published with magnetic data.

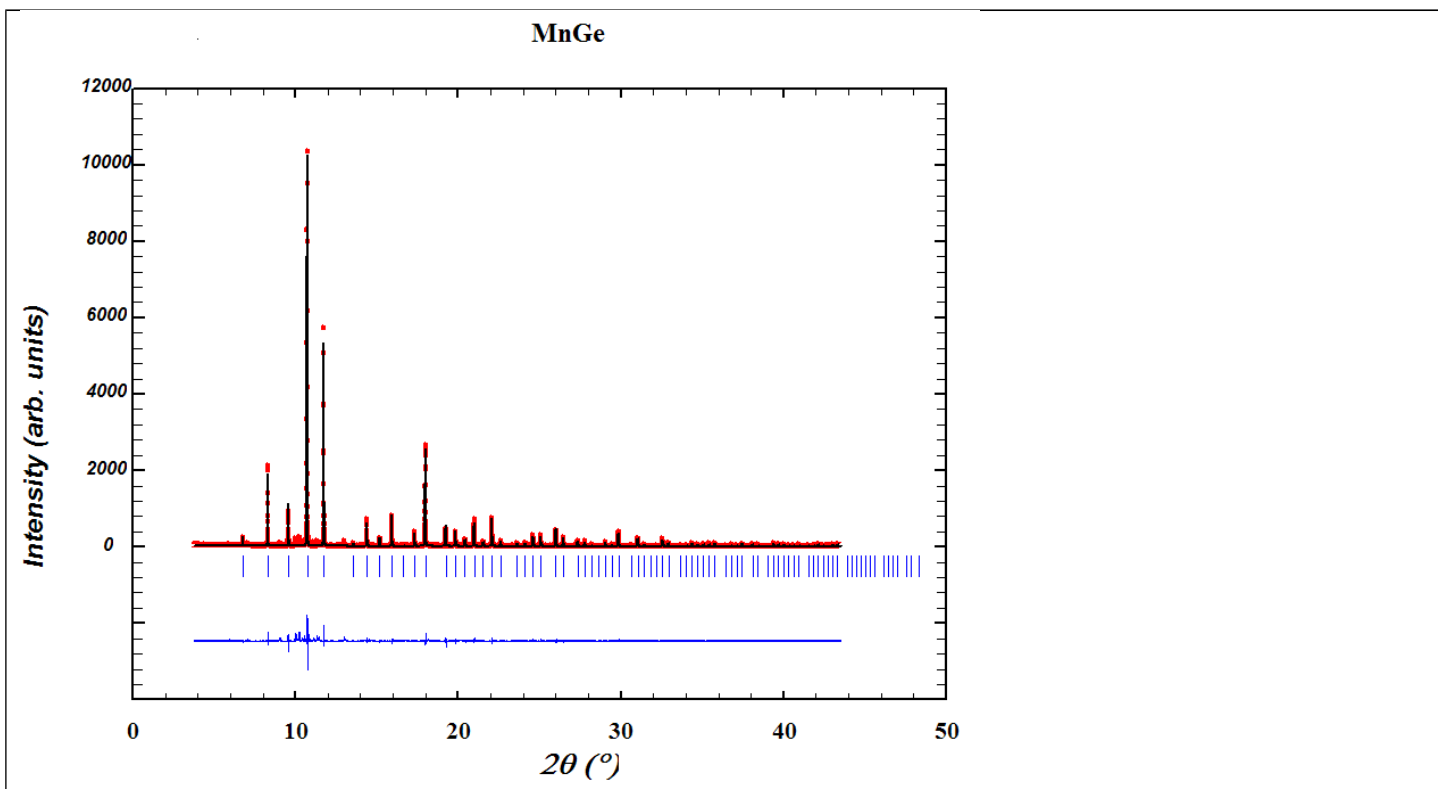


Fig. 1. An example of Rietveld refinement of x-ray powder diffraction pattern for MnGe sample at 80 K.

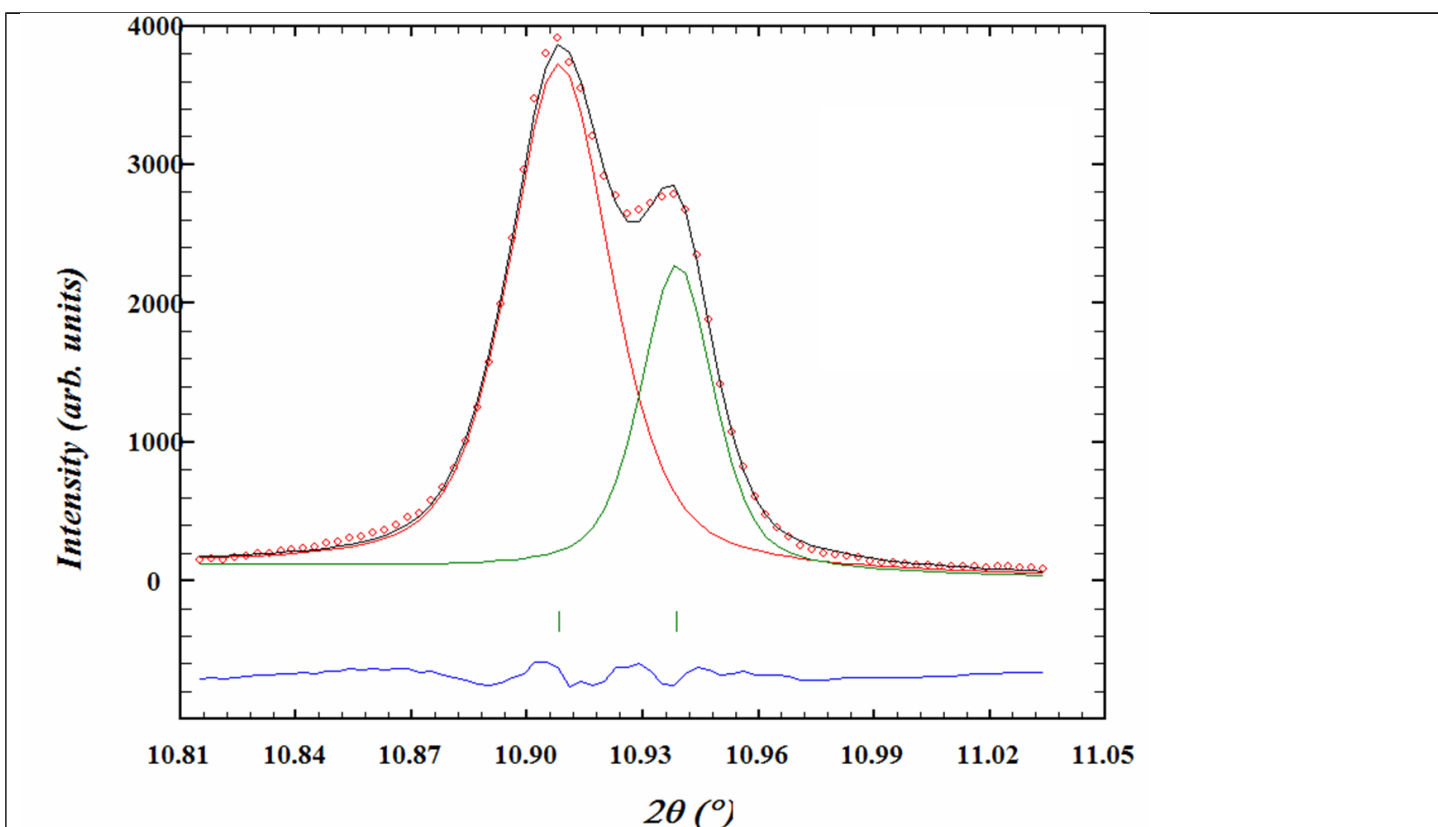


Fig. 2. An example of bimodal Bragg intensities distribution for (120) reflection ( $\text{Mn}_{0.4}\text{Co}_{0.6}\text{Ge}$  sample, 80K).