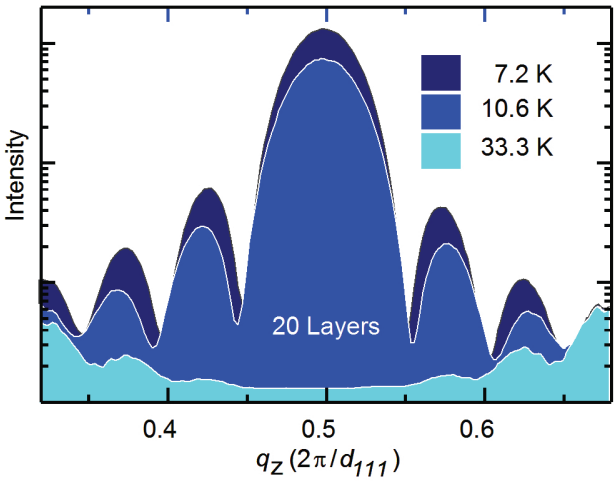

Figure 1. (½ ½ ½) magnetic diffraction peak recorded from 20 layers of EuTe at the Eu-M_5 resonance. The temperature-dependent Laue oscillations can be analyzed to provide the layer-resolved magnetizations of the film.

Keywords: Resonant x-ray scattering, transition metal oxides, thin films, heterostructures, multiferroics

MS25-P7 Antiferromagnetic ordering in selected TmTX (T = transition metal; X – p-electron element) intermetallics

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Ternary intermetallics of general composition RTX (R – rare eatrh element; T = transition metal; X – p-electron element) are interesting group of compounds which draws researchers' interest for several decades. Among these compounds special concern is attracted to those crystallizing in the ZrNiAl-type structure. This hexagonal structure (space group P-62m) consists of layers containing rare earth atoms separated by layers consisting of two remaining elements. Within one layer the rare earth atoms form a distorted kagome lattice. Such a triangular arrangement of atoms having localized magnetic moments may lead to magnetic frustration in case of antiferromagnetic interactions.

In this study we report on physical properties of six thulim intermetallics crystallizing in the ZrNiAl-type structure, namely: TmTIn (T = Ni, Pt, Pd) and TmAgX (X = Si, Ge, Sn). The compounds have been investigated by means of magnetometric, heat capacity and electrical resistivity measurements. Their magnetic structures were derived from neutron diffraction data. All investigated compounds show antiferromagnetic ordering with Néel temperatures not exceeding 4.2 K. Among magnetic structures both the commensurate ones as well as incommensurate with crystal structure are found. Especially interesting is the case of magnetic structure in TmAgX (X = Si, Ge) where to each of three magnetic moments, present in the crystal unit cell, a different propagation vector is applied. Magnetic structure determination has been supported by a symmetry analysis.

Keywords: magnetic structure, neutron diffraction, rare earth intermetallics