FZU
Institute of Physics of the Czech Academy of Sciences

SEMINAR

21.12. 2022 | 13:30

In FZU/Solid Building, room P.19, Na Slovance 2, Praha 8

Ladislav Straka

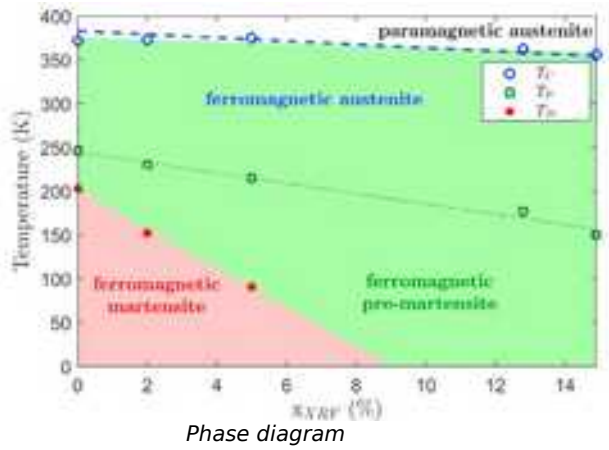
Magnetically induced transitions in Heusler alloy Ni2MnGa1-xInx single crystals in high magnetic field

Short abstract:

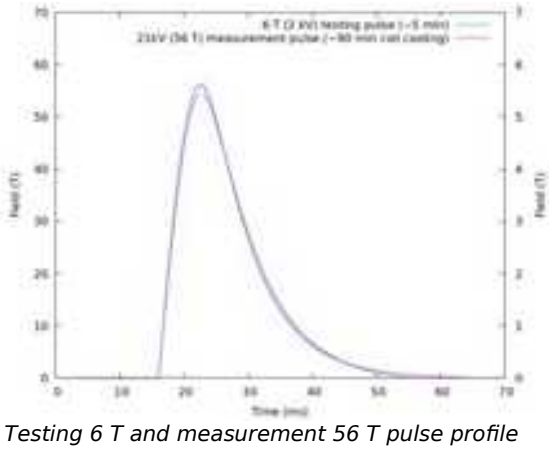
Results from the measurements on Ni-Mn-Ga-In, performed at HZDR Dresden by L.Straka & O. Heczko at the end of November 2022, will be presented briefly on the seminar.

Long abstract:

To study the effect of composition on martensitic transformation (MT) while keeping constant the concentration of valence electrons we prepared several Ni2MnGa1-xInx single crystals. We started with prototypical Ni2MnGa which exhibits the transformation at about 200 K and dilute gradually the Ga with isoelectronic In. Alloying by In decreases the temperature of MT and to our surprise relatively small fraction of In suppresses the MT entirely [3] as shown in Figure. We demonstrated that MT can be manipulated by magnetic field (up to 14 T in PPMS) and thus these alloys were suitable objects for a high-field magnetization study.



Phase diagram



Testing 6 T and measurement 56 T pulse profile

The high-field, up to 56 T, magnetization study focused on the possibility to induce the MT by high magnetic field, i.e. we worked near the red-green boundary in the above figure. In the presentation the motivation and technique will be introduced briefly together with the main results. The important issues connected with the pulse character of the high field, as contrasted to the previous measurements in the static field, will be discussed in the end.

References

Cejpek, P., Proschek, P., Straka, L., & Heczko, O. (2022). J. Alloys Compounds, 908, 164514

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