

EINLADUNG zum IFP-SEMINAR

Charge density waves (CDW) and magnetism in $RNiC_2$ family (R - rare earth metal)

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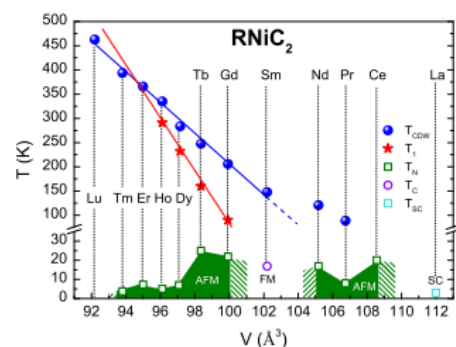
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Ort: Institut für Festkörperphysik, TU Wien
Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum DC rot 07 (roter Bereich, 7. OG)

Abstract:

The ternary rare-earth nickel dicarbides $RNiC_2$ (R - rare earth metal) with a non-centrosymmetric type of crystal structure offer a unique opportunity to tune the ground state with varying R atom. The charge density waves (CDW) have been found for most of the $RNiC_2$ family (R = Pr – Lu) with the temperature scaling linearly with the unit-cell volume (see figure above) [1]. $LaNiC_2$ compound is an unconventional superconductor [2], $SmNiC_2$ undergoes a ferromagnetic transition [3] and the rest of the compounds (apart from nonmagnetic $YNiC_2$ and $LuNiC_2$ exhibiting large positive magnetoresistance [4], [5] and $PrNiC_2$ where only a weak magnetic anomaly is observed [7]) order antiferromagnetically.

In this presentation, the large diversity of physical phenomena occurring in $RNiC_2$ family will be discussed in terms of relations between various types of ordering. In first part of presentation, the main emphasis will be put on the CDW mutually interacting with magnetism in the polycrystalline $RNiC_2$ and their solid solutions [6], [7] while in second part - crystal growth technique of monocrystalline $RNiC_2$ compounds and some preliminary results of physical properties measurements will be presented.



M. Roman et al., Physical Review B 97 (2018) 041103.

- [1] M. Roman et al., Physical Review B 97 (2018) 041103.
- [2] J. F. Landaeta et al., Physical Review B 96 (2017) 174515.
- [3] H. Onodera et al., J. Magn. Magn. Mater. 182, 161 (1998).
- [4] K. K. Kolincio et al., Physical Review B 99 (2019) 205127.
- [5] S. Steiner et al., Physical Review B 97 (2018) 205115.
- [6] M. Roman et al., Physical Review B 99 (2018) 035136.
- [7] K. K. Kolincio et al., Physical Review B 95 (2017) 235156.