# Electronic structure and thermodynamic properties of $CeRh_2Sn_4$

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We performed a study of the compound $CeRh_2Sn_4$ which has not yet been investigated so far. Our samples were carefully characterized by X-ray powder diffraction and by locally resolved, energy dispersive X-ray spectroscopy (EDXS). We present combined experimental and theoretical study based on thermodynamic data (heat capacity and magnetic susceptibility) and X-ray photoelectron spectroscopy (XPS) data together with *ab-initio* band structure calculations.

The Ce 3*d* XPS spectrum indicates a small mixed valence of Ce. Analysis of the $3d^9 4f^2$ weight using Gunnarson-Schoenhammer theory [1, 2] suggest a hybridization between Ce 4*f* states and the conduction band of about 85 meV. The valence band spectrum, dominated by Rh 4*d* states is in very good agreement with calculated one. Heat capacity measured in different magnetic fields revealed an antiferromagnetic (AFM) transition at 3.16 K. Magnetization data measured at 1.8 K suggest the noncollinear AFM structure or strong anisotropy. Entropy calculated on the basis of the magnetic part of heat capacity exhibits no evidence for Kondo interactions [3].

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