

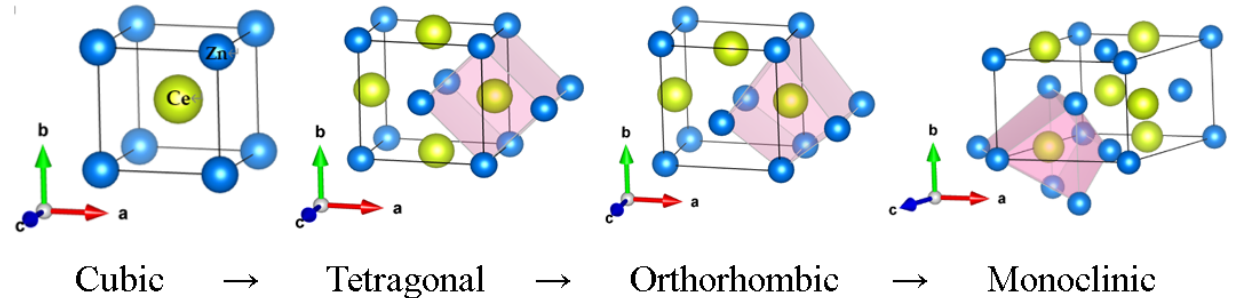
物理工学談話会

Effect of pressure on the lattice structure and electronic properties of the CeZn single crystal

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場所: Zoom



abstract

Most of the CsCl-type compound with chemical formula $ReTm$ (where Re = rare earth elements such as La, Ce, Pr,... and Tm = transition metal elements, Zn, Ag.. etc) undergo a cubic-to-tetragonal structural transition on cooling, followed by a magnetically ordered state at a lower temperature. These structural and magnetic transitions are very sensitive to external perturbation, such as chemical substitution or pressure, thus revealing other emergent states as a function of varying tuning parameters. With decreasing temperature, CeZn exhibits a first order coupled paramagnetic to antiferromagnetic transition and a cubic to tetragonal structural transition at $T_N \sim 30$ K. Above 1.0 GPa, the coupled magnetic and crystal structural transition becomes separated and the antiferromagnetic order changes to ferromagnetic order. In this talk, I will present the investigation of the electrical, magnetic, and structural properties of CeZn single crystal under high pressure up to 10 GPa and down to 30 mK. The ferromagnetic ordering temperature decreases and changes to a nonmagnetic state around 2.5 GPa. Furthermore, the signature of multiple structural transition and superconductivity were detected at higher pressure.

どなたでも気軽にご参加ください。世話人: 上原 (uehara-masatomo-cf@ynu.ac.jp)

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