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**Study of electronic structure and valence state of $CeCo_2$ nanoparticles** CHUNG-LI DONG, YANG-YUAN CHEN, Institute of Physics, Academia Sinica, Taiwan, R.O.C., CHING-LIN CHANG, Department of Physics, Tamkang University, Taiwan, R.O.C., JINGHUA GUO, Advanced Light Source, Lawrence Berkeley National Laboratory, CA — We have performed the Ce $L_3$-, $M_{4,5}$-edge and Co $L_{2,3}$-, K-edge x-ray absorption measurements to investigate the dependence of valence state and local electronic structures on different particles size of $CeCo_2$. By monitoring the modifications in Ce $L_3$- and $M_{4,5}$-edges XAS spectra shape, the individual intensities of the two valence states reflect the mixed configuration in the ground state in $CeCo_2$. The Ce in nanopartice $CeCo_2$ exhibits mixed valence with only small amount of tetravalent Ce, which is in contrast to the bulk. Combination with the results observed from the Co $L_{2,3}$-, K-edge, reduced in valence for nanoparticles can be interpreted in terms of surface effects and gives rise to weaker hybridization between the Co 3d and Ce 4f-5d states.

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