Abstract Submitted
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Superconductivity in $\mathbf{Zr_2(Co_{1-x}M_x)}$ (M = Cu, Ga)[1] K.J. SYU, C.H. WU, H.H. WU, S.C. CHEN, H.H. SUNG, W.H. LEE, National Chung Cheng University, W.H. LEE TEAM — As revealed in the powder x-ray diffraction and crystallographic data, the body-centered tetragonal structure of the parent compound Zr_2Co is retained in both $Zr_2(Co_{1-x}Cu_x)$ and $Zr_2(Co_{1-x}Ga_x)$ systems with the solubility limit near $x = 0.3$. The refined lattice parameters indicate that there is a movement for c to decrease and a to increase, due to the doping with Cu or Ga in the compound. Since the percentage change in lattice parameters c and a is comparable, a prominent peak in the unit cell volume v versus x curve therefore appears around$x$ = 0.15 and $x = 0.2$ for $Zr_2(Co_{1-x}Cu_x)$ and $Zr_2(Co_{1-x}Ga_x)$ systems, respectively. Magnetic and electrical measurements show that there is an explicit maximum T_c close to $x = 0.05$ for both systems. As compared with the $Zr_2(Co_{1-x}Ni_x)$ system[1], it may imply that the superconducting transition temperature in $Zr_2(Co_{1-x}Cu_x)$ and $Zr_2(Co_{1-x}Ga_x)$ relate more to the spin density fluctuations than to the density of states at the Fermi level. [1]M. Takekuni, H.Sugita and S. Wada, Phys. Rev. B **58**, 11698 (1998).

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