

Abstract Submitted
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Doping effects of transition metals on superconducting properties of (Ca,RE)FeAs₂ HIROYUKI YAKITA, HIRAKU OGINO, TOMOYUKI OKADA, AKIYASU YAMAMOTO, KOHJI KISHIO, JUN-ICHI SHIMOYAMA, Univ of Tokyo, AKIRA IYO, HIROSHI EISAKI, AIST, ALBERTO SALA, Univ of Tokyo, AIST, Univ of Genova — At the previous March Meeting, we reported new iron based superconductors (Ca,RE)FeAs₂ (Ca112) (RE = La-Nd, Sm-Gd)^[1,2]. Superconducting transition was observed in all samples except for Ce-doped sample, and T_c of La-doped sample exceeded 30 K. In this study, we have synthesized transition metals (TM = Mn, Co, Ni) co-doped Ca112 samples. Mn co-doping suppressed superconductivity. On the contrary, enhancement of T_c with sharp superconducting transitions was observed in most of the Co or Ni co-doped samples. T_c of Co co-doped samples decreased with a decrease in ionic radii of RE^{3+} from 38 K for RE = La to 29 K for RE = Gd, though Eu doped sample showed exceptionally low $T_c = 21$ K. J_c value of La and Co co-doped sample estimated from magnetization measurement is approximately 2.0×10^4 Acm⁻² at 2 K suggesting bulk superconductivity. [1] H. Yakita *et al.*, *J. Am. Chem. Soc.* **136** (2014) 846 [2] H. Yakita *et al.* APS March Meeting 2014 C1 00090

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