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Microscopic, Transport and Thermodynamic properties of $\mathbf{Ca_{10}(Pt_3As_8)((Fe_{1-x}TM_x)_2As_2)_5}$ (TM=Co, Ni) single crystals SHAN JIANG, NI NI, Univ of California - Los Angeles — Here we report detailed microscopic, transport and thermodynamic measurements on two series of high quality single crystals $Ca_{10}(Pt_3As_8)((Fe_{1-x}TM_x)_2As_2)_5$ (TM=Co, Ni). With electron doping on Fe sites, the structural/magnetic phase transitions in the parent compound were suppressed at a rate of roughly -7K per 0.01Co doping and -9K per 0.01Ni doping. Superconductivity emerges in the region of $0.048 < x < 0.20$ for Co doping with optimal Tc of 13.5K ($x = 0.11$) while it occurs in the region of $0.035 < x < 0.11$ for Ni doping with optimal Tc of 9.6K ($x = 0.064$). No coexistence of AFM and SC is observed, which is different from the well-studied 122 Fe-pnictides but reminiscent the one of La1111. The comparison of the effect between Co- and Ni- doping on 10-3-8 shows that rigid band approximation is likely working for these two dopants in this superconducting family.

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