Abstract Submitted
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Superconductivity in La(Ni$_{1-x}$T$_x$)C$_2$ (T = Cu, Ti, and Pt)$^1$ H.H. SUNG, S.Y. CHOU, Y.C. KUNG, H.K. KUO, K.J. SYU, W.H. LEE, Department of Physics, National Chung Cheng University, Ming-Hsiung, Chia-Yi, Taiwan, ROC, W.H. LEE TEAM — LaNiC$_2$, which crystallizes in an orthorhombic CeNiC$_2$ type structure with space group $A_{mm2}$, is the first nickel-based ternary carbide superconductor with $T_c \approx 2.7$ K.$^{1,2}$ Previous report showed that about 50% substitution of La in LaNiC$_2$ with the 5f thorium (Th) element could enhance the superconducting critical temperature $T_c$ up to 7.9 K.$^3$ We present the results of static magnetization and electric resistivity data for fifteen polycrystalline La(Ni$_{1-x}$T$_x$)C$_2$ (T = Cu, Ti and Pt) compounds measured in the temperature range 1.8 $\sim$ 4.4 K and 2.0 $\sim$ 300 K, respectively. Discussion of the improvement, with respect to pure LaNiC$_2$, on the superconducting critical temperature $T_c$ will be directed toward the changes of valence, lattice parameters as well as the effects of solubility limit in the pseudoternary La(Ni$_{1-x}$T$_x$)C$_2$ alloys. $^1$W.H. Lee, H.K. Zeng, Y.D. Yao and Y.Y. Chen, Physica C 266, 138 (1996). $^2$V.K. Pecharsky, K.A. Gschneidner, Jr., and L.L. Miller, Phys. Rev. B 58, 497 (1998). $^3$W.H. Lee and H.K. Zeng, Solid State Commun. 102, 433 (1997).

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