

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Superconductivity in new iron pnictide oxide $\text{Fe}_2\text{As}_2\text{Sr}_4(\text{Mg},\text{Ti})_2\text{O}_6$ SHINYA SATO, University of Tokyo, HIRAKU OGINO, KOHJI KISHIO, JUN-ICHI SHIMOYAMA, DEPARTMENT OF APPLIED CHEMISTRY, THE UNIVERSITY OF TOKYO TEAM — A new iron arsenide oxide $\text{Fe}_2\text{As}_2\text{Sr}_4\text{MgTiO}_6$, which is isostructural with the iron-based superconductor $\text{Fe}_2\text{Pn}_2\text{Sr}_4\text{M}_2\text{O}_6^{[1,2]}$, has been successfully synthesized by the solid-state reaction in quartz ampoules. $\text{Fe}_2\text{As}_2\text{Sr}_4\text{MgTiO}_6$ has antiferrotype iron arsenide layer and K_2NiF_4 -type oxide layer, while the M -site is composed of a combination of divalent (Mg^{2+}) and tetravalent (Ti^{4+}) cations as in the case of a double perovskite $\text{La}(\text{Mg},\text{Ti})\text{O}_3$. This fact indicates chemical flexibility of the perovskite-related layer in this system. This compound showed bulk superconductivity with T_c of ~ 20 K by partial substitution of Co for Fe. Moreover, high T_c above 35 K was recorded by samples starting from Co-free and Ti-rich compositions, $\text{Fe}_2\text{As}_2\text{Sr}_4(\text{Mg}_{1-x}\text{Ti}_x)_2\text{O}_6$ ($x = 0.7\sim 0.8$). [1] H. Ogino *et al.*, *Supercond. Sci. Technol.* **22** (2009) 075008. [2] X. Zhu *et al.*, *Phys. Rev. B* **79** (2009) 220512(R).

Shinya Sato
University of Tokyo

Date submitted: 01 Dec 2009

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