

Abstract Submitted  
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**Development of iron pnictides with very thick perovskite-type blocking layers** HIRAKU OGINO, SHINYA SATO, NAOTO KAWAGUCHI, YASUAKI SHIMIZU, KENJI MACHIDA, AKIYASU YAMAMOTO, KOHJI KISHIO, JUN-ICHI SHIMOYAMA — Recently we have discovered several new layered iron pnictides having extremely thick blocking layers [1]. These compounds have up to 5 sheets of perovskite-type layers between iron pnictide layers. Similar to LiFeAs, these compounds showed bulk superconductivity without intensive carrier doping, and the  $T_c$  of the compounds are 40 K-class. On the other hand, the relationship between  $T_c$  and the iron-plane interlayer distance suggested that  $T_c$  of the iron based superconductor is basically determined by the local structure of Fe<sub>2</sub>As<sub>2</sub> layer. It is thought that there is still considerable room for the development of new layered iron pnictide compounds, due to the structural and chemical flexibility of the blocking layer. However, the results suggest that optimization of the local structure of Fe<sub>2</sub>As<sub>2</sub> layers and the dimensionality of the crystal structure may not lead to further enhancement of  $T_c$ . Their structural features as well as physical properties will be presented.

[1] H. Ogino et al., APL 97 (2010) 072506

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