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Superconductivity and wire fabrication of FeSe family TOSHINORI OZAKI, KEITA DEGUCHI, YOSHIKAZU MIZUGUCHI, HIROAKI KUMAKURA, YOSHIHIKO TAKANO, National Institute for Materials Science, NATIONAL INSTITUTE FOR MATERIALS SCIENCE TEAM — The 11 family is an fascinating iron-based superconducting system for not only elucidation of superconducting mechanism but also technological applications because of the simplest crystal structures, the less toxic and high critical field. Recently, we found that the superconductivity appears in the specimen immersed in alcoholic beverages. Focused on the pressure dependence of Se height from Fe layer in FeSe, we found that the Tc is correlated to Se height. Moreover, the anion height dependence of T_c for all FeAs-based superconductor obeyed a universal curve with a peak around 1.38 Å. We succeeded in observing the transport J_c in the single- and 7-core wires of $FeTe_xSe_{1-x}$ superconductor using an in-situ powder-in-tube (PIT) method. The J_c values in single- and 7-core wire are as high as 159 A/cm^2 and 100 A/cm^2 at 4.2 K, respectively. It is considered that the optimization of the composition, together with the improvement of the grain boundary in $FeTe_xSe_{1-x}$ superconducting wires, will lead to higher J_c.

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