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Superconducting phase diagram of single crystal $Ba_{1-x}K_xFe_2As_2$ ($0.5 \leq x \leq 1.0$) KAY FUJITA, Aoyama Gakuin Univ, KUNIHIRO KIHOU, National Institute of Advanced Industrial Science and Technology (AIST), KAZUMASA HORIGANE, Aoyama Gakuin Univ, CHUL-HO LEE, National Institute of Advanced Industrial Science and Technology (AIST), JUN AKIMITSU, Aoyama Gakuin Univ — Among other iron pnictides, $Ba_{1-x}K_xFe_2As_2$ is unique regarding the persistence of superconductivity in this compound up to the end member KFe_2As_2. Interestingly, the SC gap is changed with hole doping from fully opened gaps near the optimally doped region (x =0.4) to nodal gaps at the end member, KFe_2As_2. From these results, it is expected to show two-dome structure in superconducting phase diagram. However, it has not been clarified whether two-dome structure is seen or not because there are only a few repots on the phase diagram from optimally doped region to the end member. In this study, we report the result of the phase diagram of $Ba_{1-x}K_xFe_2As_2$ using the single crystals. The single crystals were synthesized by self-flux method and we succeeded in growing single crystalline samples from 0.5 to 1.0. The superconducting transition temperature (T_c) was determined by SQUID measurement. As increasing K concentration x, T_c did not follow the linear relation around x =0.7. The result suggests that this compound may have two-dome structure.

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