

## Pressure tuning of superconductivity of $A_x\text{Fe}_{2-y}\text{Se}_2$ (A=K and Rb) single crystals

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The recent discovery of superconductivity in  $\text{K}_{0.8}\text{Fe}_2\text{Se}_2$  with high transition temperature above 30 K has generated considerable interest not only since its  $T_c$  is almost ten times higher than that in the isostructure of  $\text{KFe}_2\text{As}_2$  but it is more environmentally friendly than the latter one as well. In this talk, we will report experimental finding of pressure tuning of the superconducting transition temperature  $T_c$  and enhancement of the temperature of the resistance hump  $T_H$  through charge transfer between two iron sites with different occupancies. The activation energy for the electric transport of the high-temperature resistance is observed to go to zero at a critical pressure of 8.7 GPa, at which superconductivity tends to disappear and the semiconductor-to-metal transition takes place. Beyond the critical point, the resistance exhibits a metallic behavior over the whole temperature range studied. The observation provides an opportunity to understand the underlying mechanism of superconductivity in new FeSe-based superconductors.

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