

Abstract Submitted
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High-pressure studies for hydrogen-doped $\text{LaFeAsO}_{1-x}\text{H}_x$ and $\text{SmFeAsO}_{1-x}\text{H}_x$ HIROKI TAKAHASHI, TAKAHIRO TOMITA, HIDETO SOEDA, Nihon University, SOSHI IIMUMA, TAKU HANNA, YOSHINORI MURABA, SATORU MATSUISHI, HIDEO HOSONO, Tokyo Institute of Technology — Iron-based superconductor $\text{LaFeAsO}_{1-x}\text{F}_x$ shows the conventional superconducting dome in an x - T phase diagram with a maximum T_c of 26 K at $x = 0.1$. However, the over-doped region has not been investigated, because of the poor solubility of fluorine above $x = 0.2$. Recently, hydrogen was doped for $\text{LaFeAsO}_{1-x}\text{H}_x$ above $x = 0.5$. It is interesting that $\text{LaFeAsO}_{1-x}\text{H}_x$ exhibits the second superconducting dome in the over-doped region ($0.2 < x < 0.5$) with a maximum T_c of 36 K, in addition to the conventional dome. Since large enhancement of T_c under high pressure was reported for $\text{LaFeAsO}_{1-x}\text{F}_x$, it is intriguing to study the superconducting properties in $\text{LaFeAsO}_{1-x}\text{H}_x$ ($x > 0.2$) under high pressure. Marvelous results that T_c of $x = 0.2$, which corresponds to the ravine between two domes, is enhanced largely from 18 K to 52 K with pressure of 6 GPa are obtained from resistivity measurements. These results are compared with the superconducting properties under high pressure of $\text{SmFeAsO}_{1-x}\text{H}_x$.

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