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Multigap Superconductivity at 5.4 K in β-Bi_2Pd YOSHINORI IMAI, FUYUKI NABESHIMA, TAIKI YOSHINAKA, KOSUKE MIYATANI, ATSUTAKA MAEDA, Dept. of Basic Science, the University of Tokyo, RYUSUKE KONDO, Dept. of Physics, Okayama University, SEIKI KOMIYA, ICHIRO TSUKADA, Central Research Institute of Electric Power Industry — We report the superconducting properties of new multigap superconductor Bi_2Pd(β-Bi_2Pd; space group: $I4/mmm$)[1]. β-Bi_2Pd single crystals were grown via a melt-growth method. The temperature dependences of the electrical resistivity and the magnetic susceptibility reveal that the superconducting transition occurs at 5.4 K in the β-Bi_2Pd single crystal. This value is greater than the value of 4.25 K reported in the previous paper [2]. Here, it is interesting to note that the T_c of β-Bi_2Pd reported here is almost the same as that of Pd-intercalated Bi_2Te_3 with a very small superconducting volume fraction ($< 1\%$) in ref. [3], where the possibility that the topological insulator Bi_2Te_3 can be made into an SC by Pd intercalation between the Bi_2Te_3 layers is argued. In addition, the temperature dependences of the upper critical magnetic field and the specific heat suggest that β-Bi_2Pd is a multiple-band/multiple-gap superconductor.

[1] Y. Imai *et al.*, J. Phys. Soc. Jpn. 81 (2012) 113708. (arXiv: 1207.5905.)
[2] N. E. Alekseevski *et al.*, Zh. Eksp. Teor. Fiz. 27 (1954) 125.
[3] Y. S. Hor *et al.*, J. Phys. Chem. Sol. 72 (2011) 572.

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