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Pressure Effect on The Kondo Behavior of Layered YbB_2 BORA KALKAN, Advanced Materials Research Group, Physics Department, Hacettepe University, Ankara 06800, Turkey, SEFIK SUZER, Department of Chemistry, Bilkent University, Ankara 06800, Turkey, TAYYAR GUNGOR, ENGIN OZDAS, Advanced Materials Research Group, Physics Department, Hacettepe University, Ankara 06800, Turkey — The structural properties and the effect of pressure on the electrical properties of polycrystalline YbB_2 were investigated via x-ray diffraction and x-ray photoemission spectroscopy (XPS) under ambient pressure and resistivity measurements up to 6.2 GPa. Rietveld refinement confirmed the hexagonal layered structure of YbB_2 in P6/mmm space group with *a=b=3.2522(2) Å* and *c=3.7297(4) Å* lattice parameters. XPS and low temperature measurements proved the magnetically ordered ground state of YbB_2 in which Yb ion has already magnetic trivalent state under ambient pressure. ρ(T) measurements down to 3.5 K at various pressures exhibit a typical Kondo lattice behavior at low temperatures with a resistivity minimum around 23 K and a coherence maximum around 11 K, which define the depth of the Kondo effect. Moreover, resistivity results yield the gradual weakening of the contribution of Kondo effect and the pressure dependence of Debye temperature as $(d\theta_D/dP)=(1.46\pm0.30)$ K/GPa which is calculated using Bloch-Grüneisen approximation. These results suggest that pressure increasing causes the suppressing of Kondo effect in YbB_2.

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