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Observation of Superconductivity by Sr Intercalation in Topological Insulator Bi_2Se_3 SHRUTI SHRUTI, VISHAL MAURYA, PRAKRITI NEHA, SUDESH SUDESH, SATYABRATA PATNAIK, Jawahar lal Nehru University, New Delhi, India — Bi_2Se_3 is a well-known 3D topological insulator. Here we show that Sr intercalation into the van der Waal gaps of Bi_2Se_3 induces superconductivity with a maximum T_c of 2.9 K. The single crystals of $Sr_xBi_2Se_3$ for x= 0 to 0.2 were prepared by self-flux method. The optimally doped sample $Sr_{0.1}Bi_2Se_3$ shows a large superconducting shielding fraction of 93% with $T_{c-onset}$ of 2.94 K. Using transport measurement, the anisotropy in $Sr_{0.1}Bi_2Se_3$ is found to be Γ = 1.5 with an upper critical field $H_{c2}(0)$ equal to 2.1 T for magnetic field applied along the *ab* plane of the sample. Along *ab* plane of the sample, the lower critical field $H_{c1,ab}(0)$ is estimated to be 0.39 0.02 mT. Hall and Seebeck measurements shows electroninc carrier concentration of $n = 1.85\ 10^{19}$ cm^{-3} at 10 K. Such low carrier concentration indicates the possibility of unconventional pairing state.

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