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Torque magnetometry study of Fe and Ni doped SmB6 COLIN TINSMAN, GANG LI, BENJAMIN LAWSON, FAN YU, TOMOYA ASABA, Univ of Michigan - Ann Arbor, XIANGFENG WANG, JOHNPIERRE PAGLIONE, Univ of Maryland - College Park, LU LI, Univ of Michigan - Ann Arbor — There has been renewed interest in the past few years regarding Samarium Hexaboride, a promising candidate to be a topological Kondo insulator. Work on this material represents an extension of the categorization of materials by the topology of their electronic band structure into systems with strong correlation effects. It is known that by introducing magnetic impurities, such as Iron, Nickel, and Europium, the magnetic ground state of SmB_6 could be greatly altered. In this study we will present our torque magnetometry data of Fe and Ni doped SmB_6, down to 20 mK, and up to 45 Tesla. It is found that the overall symmetry of the angular dependence of torque with respect to magnetic field changed for both Fe-doped SmB_6 and Ni-doped SmB_6. For pure SmB_6, the angular dependence is proportional to $\sin(2\theta)$, as expected for a paramagnetic material. By contrast, for Fe-doped SmB_6 and Ni-doped SmB_6, the torque vs. tilt angle profile becomes $\sin(4\theta)$. Furthermore, for Fe_xSmB_6 the field dependence of torque shows a sharp bend feature around 9 Tesla, which softens with elevating temperature, and could be related to magnetic moment re-alignment.

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