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Effect of magnetic and non-magnetic substitution in topological Kondo insulator SmB₆ XIANGFENG WANG, YASUYUKI NAKAJIMA, SHANTA SAHA, JOHNPIERRE PAGLIONE, University of Maryland, College Park, JEFF SONIER, Simon Frasier University, PROF. JOHNPIERRE PAGLIONE TEAM, PROF. JEFF SONIER TEAM — The topological Kondo Insulator SmB₆ is believed to be the first realization of a topological insulator with true bulk insulating properties that coexist with a robust conducting surface state that mounting evidence suggests is non-trivial. Here we report of a systemic study of the magnetic and non-magnetic doping effect in SmB₆, in particular the effect of iron inclusion as well as both magnetic and non-magnetic rare earth substitution in Sm_{1-x}R_xB₆. We will present our careful investigations of crystal structure, transport properties and magnetization, as well as muon spin rotation studies that together suggest a very profound effect on both the bulk and surface state properties.

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