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NMR study of partially filled skutterudites $A_xCo_4Sb_{12}$ (A = Yb, Ba, Sr, Ca) and $Ba_xYb_yCo_4Sb_{12}$.[1] YEFAN TIAN, ALI SIRUSI, JOSEPH ROSS, Texas AM University, SEDAT BALLIKAYA, Istanbul University, CTIRAD UHER, University of Michigan, YUQI CHEN, CHIHIRO SEKINE, Muroran Institute of Technology — Partially filled Co-Sb skutterudites have been of considerable interest as thermoelectric materials, particularly with multiple filling for which high ZT values can be obtained. This is due in part to control of phonon thermal conductivity, but also the change in composition leads to subtle changes in electronic behavior as well as magnetism due both to rare earth filler atoms and to native defects. We measured ^{59}Co NMR on several partially filled $A_xCo_4Sb_{12}$ skutterudites in order to investigate such behavior. From the T-dependent NMR shifts along with T_1 relaxation times we can separate metallic shift contributions from those due to local moments. We compare the results to predicted band-edge behavior with multiple minima, and the estimated g factors, by matching this behavior to transport measurements. Also the behavior of Yb-filled samples provides an estimate of the conduction band mediation of the magnetic response, and we also find magnetic shifts in Ba-doped skutterudite which we address in terms of Co mixed-valence behavior.

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Yefan Tian
Texas A
M University

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