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Flux Growth of Heavy Fermion LiV_2O_4 Single Crystals[1] S. DAS, X. ZONG, A. NIAZI, D.C. JOHNSTON, Ames Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, IA 50011 — The spinel-structure compound LiV_2O_4 is a rare *d*- electron heavy fermion. Measurements on single crystals are needed to clarify the mechanism for the heavy fermion behavior. In addition, it is known that small concentrations (< 1 mol%) of magnetic defects in the structure strongly affect the properties, and measurements on single crystals containing magnetic defects would help to understand the latter behaviors. Herein, we report growth at 950–1030 °C of 1 mm^3 size octahedron-shaped LiV_2O_4 single crystals using a self- flux technique. The magnetic susceptibility of the as-grown crystals shows a Curie-like upturn at low temperatures arising from ≈ 0.5 mol% magnetic defects within the spinel structure. After annealing at 700 °C, the Curie-like upturn (and magnetic defects) disappeared in some crystals, thus revealing the known intrinsic nearly temperature-independent behavior below ~ 20 K. Preliminary heat capacity measurements on as-grown crystals containing magnetic defects showed a high linear specific heat coefficient $\gamma = 450$ mJ/ (mole K^2) at 1.8 K. Additional electronic tranport, magnetic and thermal measurements on both as-grown and annealed crystals will be presented.

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