High pressure synthesis of single crystalline MgB$_2$\textsuperscript{1} M. TILL-MAN, Ames Lab / Iowa State University, G. LAPERTOT, CEA-Grenoble, DRFMC/SPSMS/IMAPEC, R. PROZOROV, C. MARTIN, S.L. BUD’KO, P.C. CANFIELD, Ames Lab / Iowa State University — We report the results of single crystal growth of MgB$_2$. A high pressure furnace, using a 19 mm truncation edge length, cubic anvil capable of reaching 3.3 GPa and 2000 C was used to grow crystals of MgB$_2$ out of the Mg-B-N ternary. Design, setup, and calibration will be discussed as well as correlations between pressure and temperature profiles and crystal size. Results of measurements of penetration depth and $H_{c2}(T)$ on single crystals will be shown as well as the results of initial doping studies.

\textsuperscript{1}Work at the Ames Laboratory was supported by the Department of Energy, Basic Energy Sciences under Contract No. DE-AC02-07CH11358.