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Boron powder purification and its effects on the microstructure and superconducting properties of MgB_2. JIANYI JIANG, BEN SENKOWICZ, XUEYAN SONG, ERIC HELLSTROM, DAVID LARBALESTIER, University of Wisconsin-Madison, APPLIED SUPERCONDUCTIVITY CENTER TEAM — MgB_2 wires can be easily fabricated by reacting Mg powder with amorphous boron powder. But commercial boron powder normally contains impurities such as B_2O_3. The presence of B_2O_3 could lead to the formation of oxides in MgB_2 wire, which may reduce the connectivity. In this work, B_2O_3 in amorphous boron powder was removed. MgB_2 samples were made both from purified and unpurified boron powders. X-ray diffraction showed that removing B_2O_3 in the boron powder resulted in a significant decrease in the content of MgO in the sample. The effects of boron powder purification on microstructure, critical temperature, critical field and connectivity will be presented.

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