

## Continuous Tube Forming and Filling Method for the Fabrication of MgB<sub>2</sub> Long Wires

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Long-length MgB<sub>2</sub> superconducting wires have been fabricated using the CTFF process. In this CTFF process, 14mm-wide sheath materials were supplied and continuously formed into the U-shape, and then the prepared MgB<sub>2</sub> powders were filled into the U-shaped sheath and made into the O-shape wires. Following was the cold drawing with the line speed of 30~100m/min, which has been conducted continuously to final wire's diameter of <1mm with a length more than 300m. To protect the MgB<sub>2</sub> powders from direct exposure to air, especially to humidity, atmosphere around the powder supplier was controlled. The sintering of thus prepared MgB<sub>2</sub> wires were performed from 600 to 1000°C in an hour with Ar/5%H<sub>2</sub> mixed gas and naturally cooled down to room temperature. The heating ramp rate was 500°C/hrs. The superconducting properties of MgB<sub>2</sub> wires were investigated using XRD, FE-SEM, and J<sub>c</sub>(I<sub>c</sub>) measurement and compared to MgB<sub>2</sub> wires made by Powder-In-Tube method. Also discussed are the choice of sheath materials for the better stabilization and winding performance for superconducting magnet applications.

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