



**MT 26**  
**International Conference**  
**on Magnet Technology**  
Vancouver, Canada | 2019

Contribution ID: 1214

Type: **Poster Presentation**

## **Tue-Mo-Po2.07-06 [46]: A Study on the Effects of Iron Diffusion Barrier on the Magnetic Field Characteristics of MgB<sub>2</sub> Coil**

*Tuesday 24 September 2019 08:45 (2 hours)*

Generally, MgB<sub>2</sub> wires possess a niobium diffusion barrier to prevent an unacceptable reaction between magnesium powder and copper stabilizer. However, given that niobium is costly, extensive studies were conducted to replace the niobium diffusion barrier with iron. Nevertheless, the MgB<sub>2</sub> wire with iron diffusion barrier is not yet practically applied to magnetic resonance imaging magnets because the magnetization of ferromagnetic iron may lead to poor uniformity of the magnetic field distribution of the magnet. In this study, the magnetic field characteristics of solenoid magnet wound with MgB<sub>2</sub> wire possessing an iron diffusion barrier were examined to investigate the iron barrier effects on the field homogeneity of magnets. In addition, the magnetic field drift of the magnet in a persistent current mode operation was presented. For a comparative analysis, an MgB<sub>2</sub> magnet that utilizes conventional wires with a niobium diffusion barrier was also assessed.

[Acknowledgement]

This work was supported by the Materials and Components Technology Development Program of KEIT [10053590, Development of MgB<sub>2</sub> wire and coil with a high critical current and long length for superconducting medical·electric power equipment].

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**Session Classification:** Tue-Mo-Po2.07 - MRI Magnets III