



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

Contribution ID: 1205

Type: **Poster Presentation**

## **Tue-Af-Po2.22-03 [77]: Investigation on the Thermal and Electrical Characteristics of GdBCO Magnet Using Intentional Bypass Current Path**

*Tuesday 24 September 2019 14:00 (2 hours)*

Recently, the NI winding technique has been actively investigated to be used in HTS magnets because this technique enables the coils to become lighter and smaller than that of conventionally insulated counterparts. However, the charge–discharge rate of the NI coil is considerably higher than that of completely insulated coils due to the absence of insulation resistance. In this study, we proposed a novel winding method that employs the intentional bypass current path (IBCP) using normal metal wires directly soldered during the first and final turn of an insulated magnet; this method may allow the over-current in a quench event to be bypassed through normal metal wires. Therefore, the magnet exhibits rapid charging/discharging rates with high thermal/electrical stabilities. The charge–discharge and over-current characteristics of the magnet fabricated using the IBCP winding technique were examined and compared with that of conventional insulation and NI magnets.

[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].

**Authors:** Mr KIHUN, Kim (Korea University); LEE, Haigun (Korea University)

**Co-authors:** Dr YOUNG-GYUN, Kim (Korea university); Mr BYEONGHA, Yoo (Korea University); Mr JIMIN, Kim (Korea University)

**Presenter:** Mr KIHUN, Kim (Korea University)

**Session Classification:** Tue-Af-Po2.22 - Stability of Conductors and Coils II