



Contribution ID: 580

Type: **Poster Presentation of 1h45m**

## A Study on Draw-ability of Nb Filaments for Manufacturing Nb<sub>3</sub>Sn Strand

*Monday 28 August 2017 13:15 (1h 45m)*

For the improvement of the critical current density of a multifilamentary Nb<sub>3</sub>Sn strand, a high integrity of Nb filaments should be obtained by the optimal cold-drawing process for reducing the cross-section of the filaments. However, as the number of drawing cycles increases, the strain-hardening exponent of the Nb filaments also increases, which consequently hinders the area reduction, and even incurs the problem of breakage of the Nb<sub>3</sub>Sn wires. In this study, the hardness and microstructure of Nb filaments were analyzed to evaluate the strain-hardening exponent changes with respect to the number of the drawing cycles. In addition, the stress analysis using the finite element method was conducted to investigate the effect of the drawing stress on the drawability.

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].

### Submitters Country

Republic of Korea

**Primary authors:** Mr KIM, Jiman (Department of Materials Science and Engineering, Korea University, Seoul, Korea); Prof. LEE, Haigun (Department of Materials Science and Engineering, Korea University, Seoul, Korea)

**Co-authors:** Mr CHOI, Yoon Hyuck (Department of Materials Science and Engineering, Korea University, Seoul, Korea); Mr KIM, Young-Gyun (Department of Materials Science and Engineering, Korea University, Seoul, Korea); Mr SHIN, Iksang (Department of Materials Science and Engineering, Korea University, Seoul, Korea); Mr SUBOK, Yun (Kiswire Advanced Technology Co., Ltd., Daejeon, Korea)

**Presenter:** Mr KIM, Jiman (Department of Materials Science and Engineering, Korea University, Seoul, Korea)

**Session Classification:** Mon-Af-Po1.08

**Track Classification:** F1 - Low-Tc Wires and Cables