MT25 Conference 2017 - Timetable, Abstracts, Orals and Posters



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A Study on Draw-ability of Nb Filaments for Manufacturing Nb3Sn Strand

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For the improvement of the critical current density of a multifilamentary Nb3Sn 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 Nb3Sn 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.

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