MT25 Conference 2017 - Timetable, Abstracts, Orals and Posters



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Enhanced critical current densities in Nb3Sn superconducting strands prepared by bronze process

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In the past much of the emphasis in the development of Nb3Sn superconducting strands has been on improving the non-Cu critical current density (Jc). Different design Nb3Sn strands were manufactured by the bronze route artificially doped with titanium in bronze. The influences of bronze to Nb volume ratio, filament diameter and Ti content were studied.Bronze to Nb volume ratio affected Jc largely for the different Nb3Sn volume formed after heat treatment. The study of filament diameter on Jc indicates that Jc increases small with the filament diameter increases. Ti diffused into Nb filament when temperature is higher than 340°C and no Ti element has been found in the Cu-Sn matrix after heat treatment.Results shows that Ti content had weak influence on Jc.Microstructure images show that residual Nb core can be seen in each filament. The Nb3Sn grains are almost equiaxed and uniform in size.

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