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Development of Distributed Tin processed Nb3Sn wire for FCC

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Kobe Steel Ltd. have been doing research of Nb3Sn wire since 1980s', and Japan Superconductor Technology, Inc. (JASTEC), one of her affilieted company manufacturing superconducting wire and magunet, has high production capacity of Bronz(Cu-Sn alloy) routed Nb3Sn wire. JASTEC was one of the main supplier of Nb3Sn strand for ITER (International Thermal Experimental Reactor) project, and supplied amount of more than 100tons of bronze routed Nb3Sn wire in total for ITER project from 2008 to 2016. Jc requirement for Nb3Sn in FCC project is much higher than ITER project. In the case of bronze routed Nb3Sn wire, Jc could be increased by the enhancement of tin concentration in Cu-Sn alloy. But higher tin concentration (more than 16% tin) makes it difficult for drawing process. So, as one of alternative method to increase tin concentration, KSL is developing Distributed Tin wire (DT wire). With this method we can improve Jc at 16 Tesla twice than the conventional our bronze routed Nb3Sn. In addition, DT compared with other high tin concentration methods such as Internal Tin, it can be manufactured stably, so it is suitable for mass production. In this presentation, we will introduce our research for increasing Jc using DT wire.

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