CEC-ICMC 2019 - Abstracts, Timetable and Presentations



Contribution ID: 1184

Type: Invited Oral Presentation

M1Or3A-04 [Invited]: Present Status and Future Prospects of Nb3Al Conductor Development in National Institute for Materials Science

Monday 22 July 2019 17:00 (20 minutes)

Prof. Kyoji Tachikawa always had strong interest for superconducting materials having high Jc in high magnetic fields. In 1980's, his interests had moved from the bronze processed V3Ga and Nb3Sn wires to advanced Nb3Al and Nb3(Al,Ge) wires, which had much higher Bc2(4.2K) of over 30 T. The stoichiometric Nb3Al as well as Nb3(Al,Ge) required high temperature heat treatment about 2,000oC, so that he proposed the liquid quenching process and the high energy beam irradiation process with his colleagues (Drs. Togano and Kumakura) at National Research Institute for Metals (NRIM). Those Jc of 18,000 A/mm2 could be obtained at 4.2 K and 15 T, and however it was difficult to fabricate a long length round wire by using those processes. In 1990's, after he moved to Tokai University from NRIM, he tried to newly synthesis Nb3Al and Nb3(Al,Ge) through the diffusion process using intermediate compounds as a starting material. He also proposed MgO powder addition to A15 in this study, and he found that it was successful to introduce effective pinning centers and to suppress the peak effect on Nb3(Al,Ge). Actually, I was Ph.D student in his laboratory at that time. Meanwhile, in 1990's at NRIM, his three colleagues (Drs. Inoue, Iijima and Takeuchi) proposed the Rapid Heating/Quenching and Transformation (RHQT) process for Nb3Al round wires. I have joined this work in the late 1000's after graduation from Tashikawa laboratory. Today L still keep gaing on the R\$D for Nh2Al

the late 1990's after graduation from Tachikawa laboratory. Today I still keep going on the R&D for Nb3Al wires after their retirement. I will give a talk about present status and future prospects of Nb3Al conductor development at National Institute for Materials Science.

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Session Classification: M1Or3A - Memorial Session: Dedicated to Prof. Tachikawa