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Tue-Mo-Po2.10-06 [78]: Extra fine filamentation with width below 100 μm by ESPC method in RE123 split wire

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The filamentation of tape shaped RE123-coated conductors is important to reduce the shielding current from RE123 superconducting layer [1] in development of a high-field magnet such as NMR and MRI. In last year, we reported the development of split wire with 16-main-core by electrical separating by bending stress (ESBS) method [2]. In this study, to obtain more main-core, an electrical separating by pressure concentration method (ESPC) without a large bending of tape was adopted. We also improved the equipment that can produce above 12 cores simultaneously. In experiments, a 30-main-core sample was prepared and the average widths of main-core and sub-core are ~ 70 and ~ 10 μm , respectively. The results in microstructure and performances, such as critical current, with manufacturing method by the ESPC method, will be discussed in upcoming MT26 at Vancouver.

[1] Xinzhe Jin, Hidetoshi Oguro, Yugo Oshima, Tetsuro Matsuda and Hideaki Maeda, "Development of a REBa₂Cu₃O_{7- δ} multi-core superconductor with "inner split" technology," Superconductor Science and Technology 29 (2016) 045006 (8pp)

[2] Xinzhe Jin, Yasuteru Mawatari, Toshihiro Kuzuya, Yusuke Amakai, Yoshinori Tayu, Naoki Momono, Shinji Hirai, Yoshinori Yanagisawa, Hideaki Maeda, "Fabrication of 16-main-core RE123 split wire using inner split method," IEEE Transactions on Applied Superconductivity (in press)

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