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Development of TFA-MOD Coated Conductors

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The MOD process for YBCO coated conductors using metal trifluoroacetate(TFA) precursors is expected to be a strong candidate as a fabrication process for coated conductors since the TFA-MOD process is a non vacuum process and has provided high Jc films. The recent progress on R&D in Japan for the coated conductors by TFA-MOD processing is reviewed. In order to apply the coated conductors to actual applications, long tape conductors with high performance and uniformity are required. In addition, a high production rate and low cost should be satisfied. Recently, in order to fabricate high performance long tapes, the following factors have been mainly investigated; 1) qualities of buffer layers and metal substrates 2) starting solution materials for the shorter process time 3) coating system and calcinations for higher production rate 4) process parameters of crystallization process. Consequently, each factor in the process has been improved and the Ic value of 312A was obtained in a short sample. Additionally, a meter-class YBCO tape was fabricated by the continuous reel to reel system and Ic distribution was investigated. As a result, the uniformity of the textured YBCO layer was confirmed by maintaining the high Ic all over the tape. This work was supported by the New Energy and Industrial Technology Development Organization (NEDO) as Collaborative Research and Development of Fundamental Technologies for Superconductivity Applications.

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