Contribution ID: **1087** Type: **Invited Oral Presentation**

M1Or2B-03 [Invited]: Enhancement of Measurement Speed over 100 m/h in Reel-to-Reel Scanning Hall Probe Microscopy Using a Multi-Channel Array

Monday 22 July 2019 12:00 (30 minutes)

In our previous study, we demonstrated that the reel-to-reel scanning Hall probe microscopy (RTR-SHPM) has a good advantage on the measurements of spatially resolved in-plane Jc distribution in a long length HTS tapes with a high spatial resolution along the tape width as well as the longitudinal direction. This is inevitable for a detection of localized defect in the tape, evaluation of an effective tape width, measurement of a very narrow tape and/or multi-filamentary tapes. However, one drawback of this method is its relatively low measurement speed around several tens meter per hour or less. In this study, we have succeeded in increasing the measurement speed significanlty by introducing a multi-channel Hall probe array. Namely, we can increase the measurement speed N times faster by using a N-channel sensor array without loosing the spatial resolution. We demonstrated a measurement speed of 108 m/h with a longitudinal spatial resolution of 1 mm by using a 3-channel Hall probe array. From the comparison beween the previous single channel measurement and the 3-channel measurement, we confirmed that the multi-channel measurement allows us to obtain the same quality Jc mapping with 3 times faster measurement speed. We can increase the measurement speed further just by increaing the numbers of the channels. Therfore, we believe that this method can be a practical diagnostics for a long length HTS tapes even in an industrial scale.
This work was supported by JSPS KAKENHI Grant Number 16H02334 and the New Energy and Industrial Technology Development Organization (NEDO).

Authors: KISS, Takanobu (Kyushu University); HIGASHIKAWA, Kohei (Kyushu University); Mr KUMAGAI, Yukihisa (Kyushu University); Mr IDE, Akihito (Kyushu University); Ms LYU, Lin (Kyushu University); Mr IMAMURA, Kazutaka (Kyushu University); Mr HIRATA, Wataru (Fujikura Ltd.); FUJITA, Shinji (Fujikura Ltd.); Dr IIJIMA, Yasuhiro (Fujikura Ltd.)

Presenter: KISS, Takanobu (Kyushu University)

Session Classification: M1Or2B - Focus Series A: REBCO Coated Conductors II