

## Uniform Quench of Au/YBCO Thin Film Meander Lines Induced with a Heater

H.-R. Kim\*, J. W. Shim, O.-B. Hyun

<sup>a</sup> *Korea Electric Power Research Institute, Taejon, Korea*

We investigated uniform quench of Au/YBCO thin film meander lines induced with a heater. The uniform quench distribution during faults is important for superconducting fault current limiter applications, because it allows application of higher voltages across the meander lines. Au/YBCO thin films grown on sapphire substrates of two-inch diameter were patterned into meander lines by photolithography. A gold film grown on the rear side of the substrate was patterned into a meander line, and used as a heater. Two meander lines on the front and the rear sides were connected in parallel. The meander lines were subjected to simulated AC fault currents for quench measurements during faults. They were immersed in liquid nitrogen during the experiment for effective cooling. Resistance of the Au/YBCO meander lines initially increased more rapidly than when the rear meander line was not connected, and consequently the fault current was limited more. The resistance subsequently became similar. The resistance distribution was more uniform, especially during the initial quench. Quench was completed significantly earlier. This resulted in uniform power distribution. These results could be explained with the concept of quench propagation, which was expedited by heat transfer across the substrate from the rear meander line.

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