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M1Or4B-04: Study on the Feasibility of Using TELENE® Resin for HTS Superconducting Magnets

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By using TELENE® resin as superconducting magnet impregnation material, training and magnet retraining after a thermal cycle were nearly eliminated in Nb₃Sn undulators and NbTi accelerator magnets. We herein perform a study on how effective TELENE is in preventing quenches also in HTS magnets, without damaging the superconductor. This study encompasses measurements of transport current, minimal quench energy (MQE) and mechanical properties of wires and cable stacks at nitrogen temperature. The critical current and the MQE of REBCO tapes was measured for bare samples, and samples impregnated with different TELENE resins and epoxies, including 2850 STYCAST and CTD-101K. The critical current of REBCO cables of various geometries was measured using a superconducting transformer. The mechanical properties were measured for both REBCO and Bi-2212 cable stacks impregnated with TELENE resins.

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