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Development of 22 T VSM System using Novel Improvements in HTS Conductor JEREMY GOOD, DARKO BRACANOVIC, Cryogenic Ltd — Current research has identified a need for greater magnetising fields during vibrating sample magnetometer (VSM) measurements and other measurement options. We present here the methodology involved in our development of a VSM system with 22 T superconducting magnet, a unique system and the highest field combined with a VSM anywhere in the world. Recent developments in HTS conductors have allowed greater reliability than previous coils made from YBCO and BISCO and thus facilitate the consistent achievement of higher magnetising fields at the sample with operation at 4.2 K rather than 2.2 K. Cryogenic Ltd wind HTS coils in both solenoid and pancake forms with an emphasis on solenoids, since they have been found to give a more reliable performance with less thermal transfer to the surrounding liquid helium. The 22T VSM system has been developed using 2G YBCO coated and BSSCO tape which exhibit critical currents up to 5 times greater than those seen in YBCO and BISCO at 4.2 K.

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