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M1Po2A-05 [29]: Importance of Tensile Strength in Bulk Superconductors

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As practical applications of bulk superconductors grown by TSMG and similar methods draw closer it has become apparent that close attention needs to be paid to the mechanical, as opposed to superconducting, properties of these materials. In particular the key limiting factor to the trapping of further increased magnetic fields in bulk superconductors appears to be their mechanical strength.

In this presentation I will discuss approaches to the evaluation of the tensile strength, including comparison of three-point and Brazilian test. The variation of strength within bulks and how this is affected by composition will also be discussed. Finally, I will address approaches to sample reinforcement, including external reinforcement, internal reinforcement and other approaches to ameliorating crack propagation.

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