

Development of Textured YBaCuO Bulk with Artificially Patterned Walls

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Abstract - The recently reported superconducting YBa₂Cu₃O_y (Y123) with artificially patterned holes is highly interesting for improving the material quality and then promising a wide variety of applications. It is well known that the core of plain bulk superconductors needs to be fully oxygenated and the defects like cracks, pores and voids must be suppressed in order that the material can trap high magnetic field or carry high current densities. To minimise these defects, we have used the Top Seeding Melt Textured Growth (TSMTG) and Seed Infiltration Growth (SIG) to prepare the single domains of YBa₂Cu₃O_y (Y123) bulk superconductors with multiple holes. The samples have been processed and the ability of this novel geometry as a superconducting magnet will be discussed. The thin wall bulk superconducting permanent magnet on extruded shape is also introduced.

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