Supplementary Material (ESI) for Chemical Communications

Biotemplated synthesis of an ordered macroporous superconductor with high critical current density using a cuttlebone template

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Electronic Supplementary Information

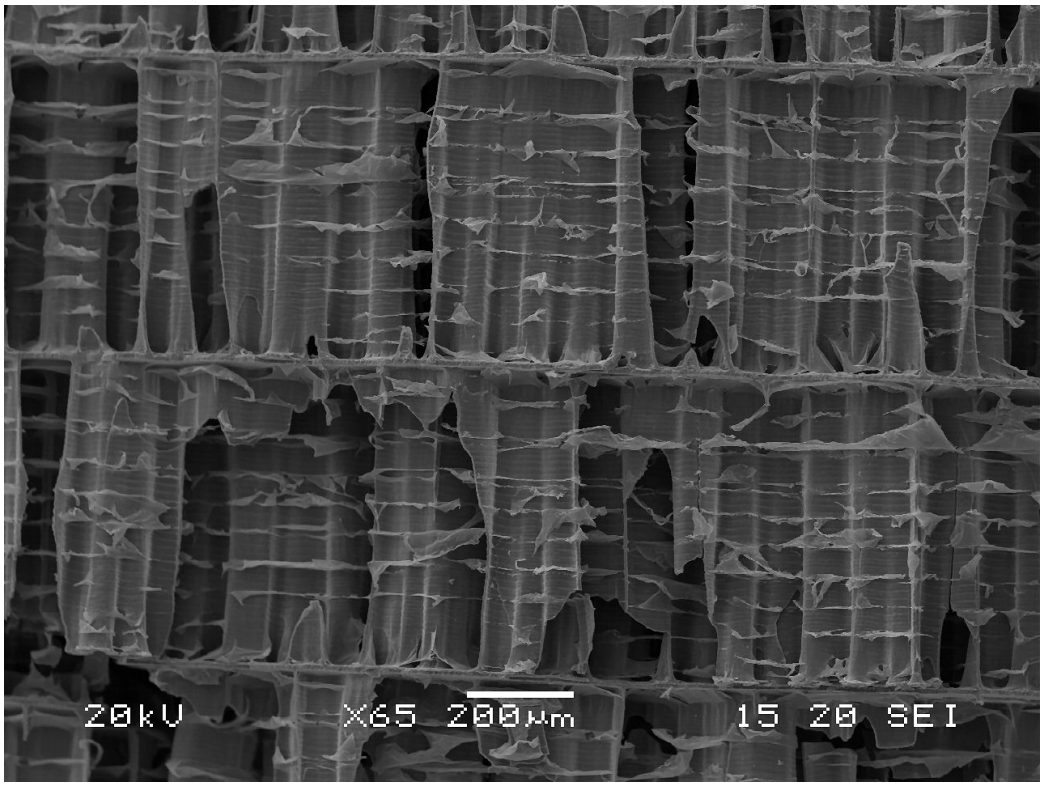

Fig. S1 SEM image of a cuttlebone, fractured to show aragonitic lamellae separated by S-shaped pillars. Scale bar is 200 µm.

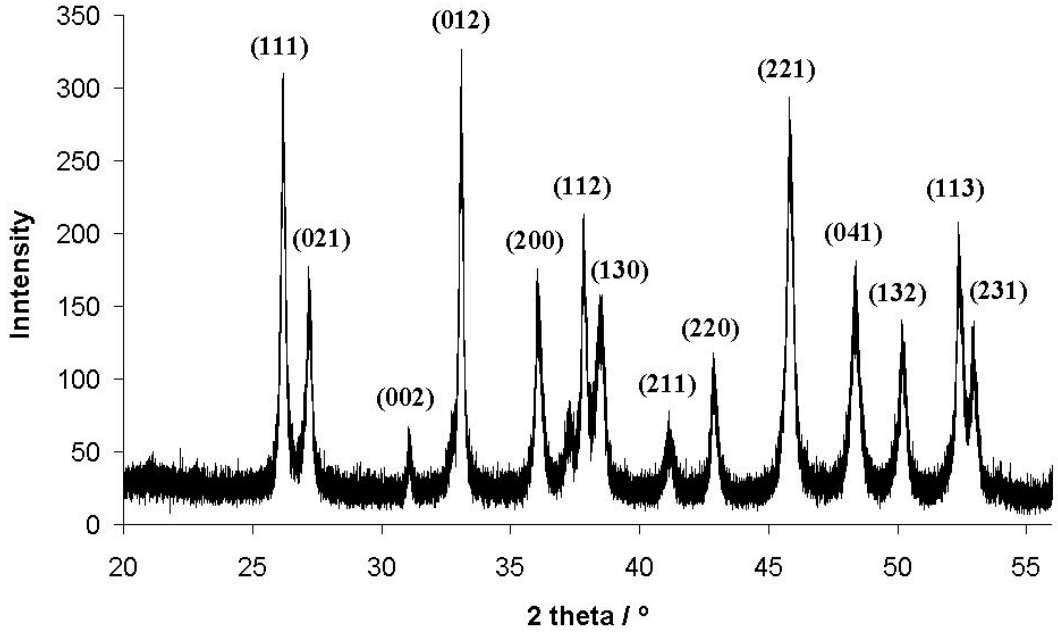

Fig. S2 X-ray diffraction pattern of as-received cuttlebone. Reflections due to aragonite have been indexed (JCPDS card # 41-1475).

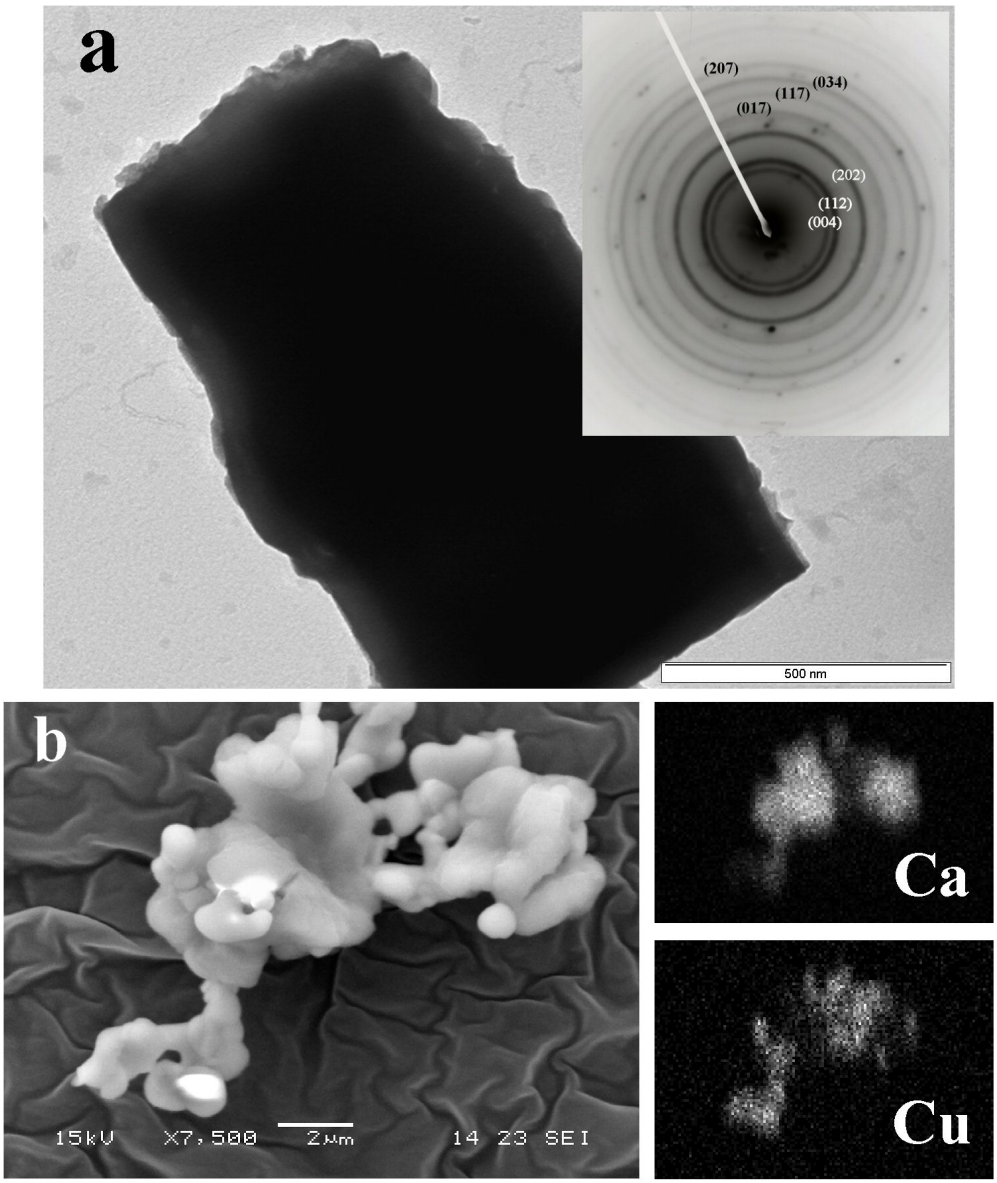

Fig. S3 (a) TEM image showing an individual crystallite of Y123 from the cuttlebone-templated Y123 material. Inset is the corresponding electron diffraction pattern indexed to Y123 (JCPDS card # 79-1229). Scale bar is 500 nm. The SEM image in (b) shows a conglomerate of inter-grown crystallites from an YBCO-cuttlebone replica. Scale bar is 2 µm. Elemental maps for calcium and copper indicate that the larger crystallites (5 µm approx.) are calcium salts and the smaller (500 nm - 1µm) are copper containing.

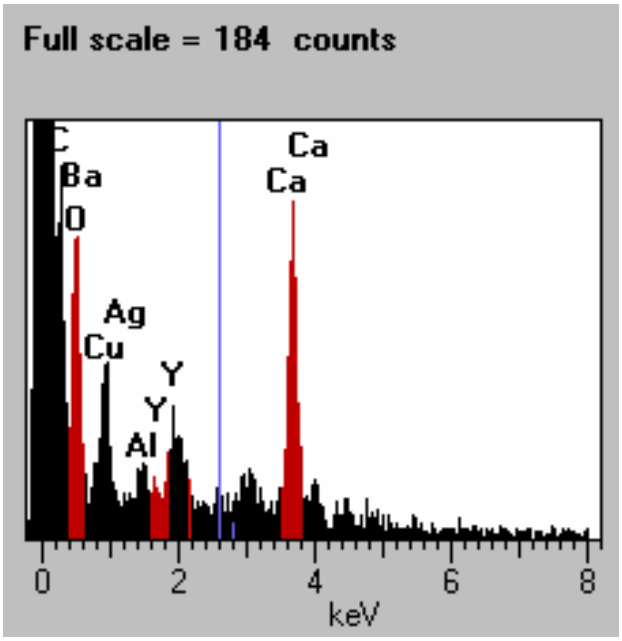

Fig. S4 EDXA pattern of Ag-doped Y123 cuttlebone replica.

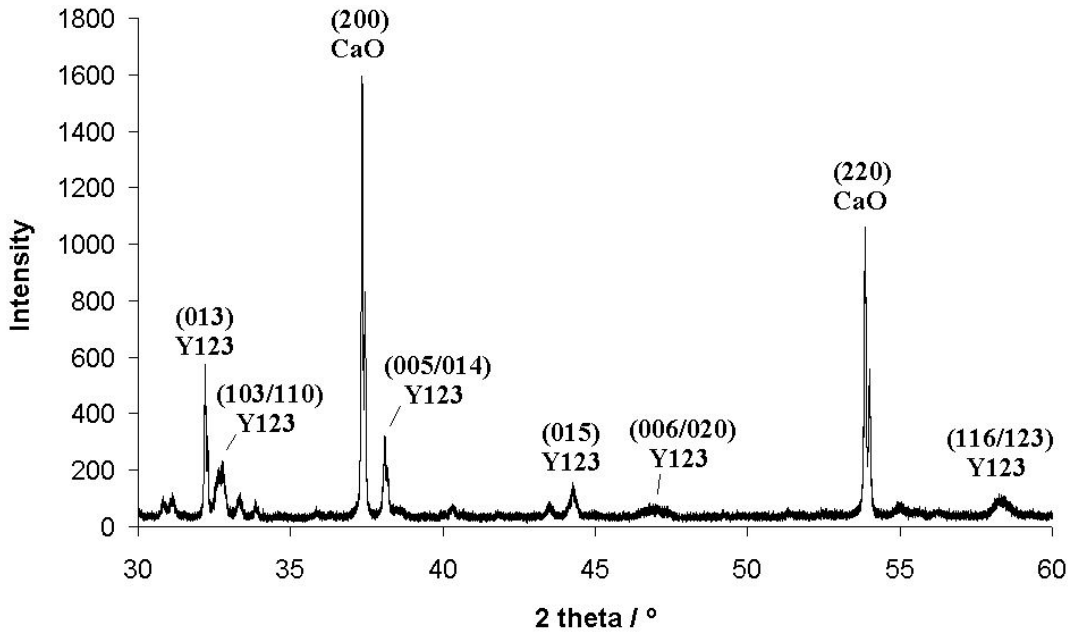

Fig. S5 X-ray diffraction pattern of Ag-doped Y123 cuttlebone replica. Reflections due to CaO (JCPDS card # 48-1548) and Y123 (JCPDS card # 79-1229) have been indexed.

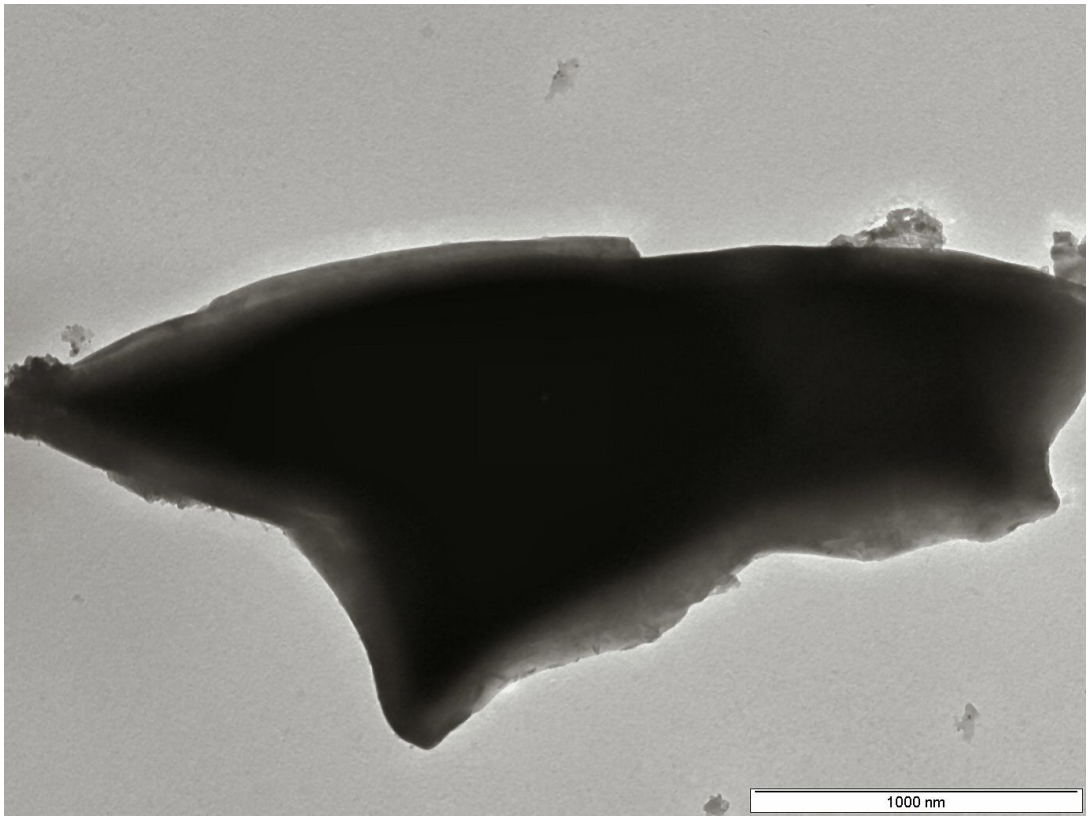

Fig. S6 TEM image of a crystallite from an Ag-doped Y123 cuttlebone replica. Scale bar is 1000 nm.

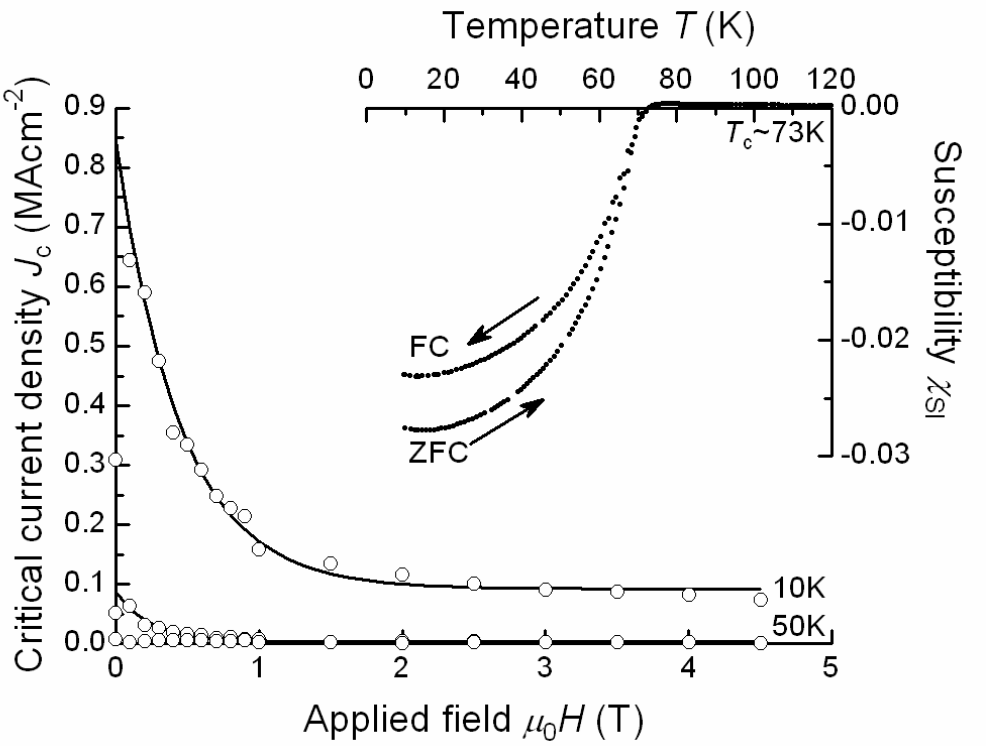

Fig. S7 SQUID magnetometry data for an Ag-doped Y123 cuttlebone replica. Plots for both T_c and J_c are shown.