Supporting Information

Monetite-Assisted Growth of Micrometric Ca-hydroxyapatite Crystals from Mild Hydrothermal Conditions

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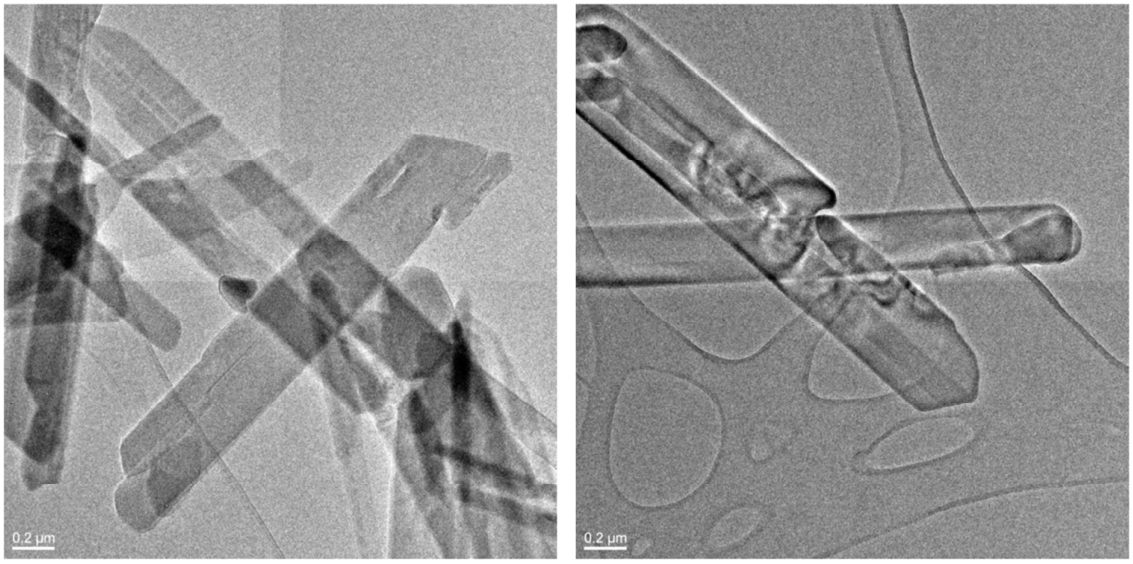

Figure S1. TEM images of some twinned HAp crystals. The sample was settled "as grown" on a carbon coated copper grid.

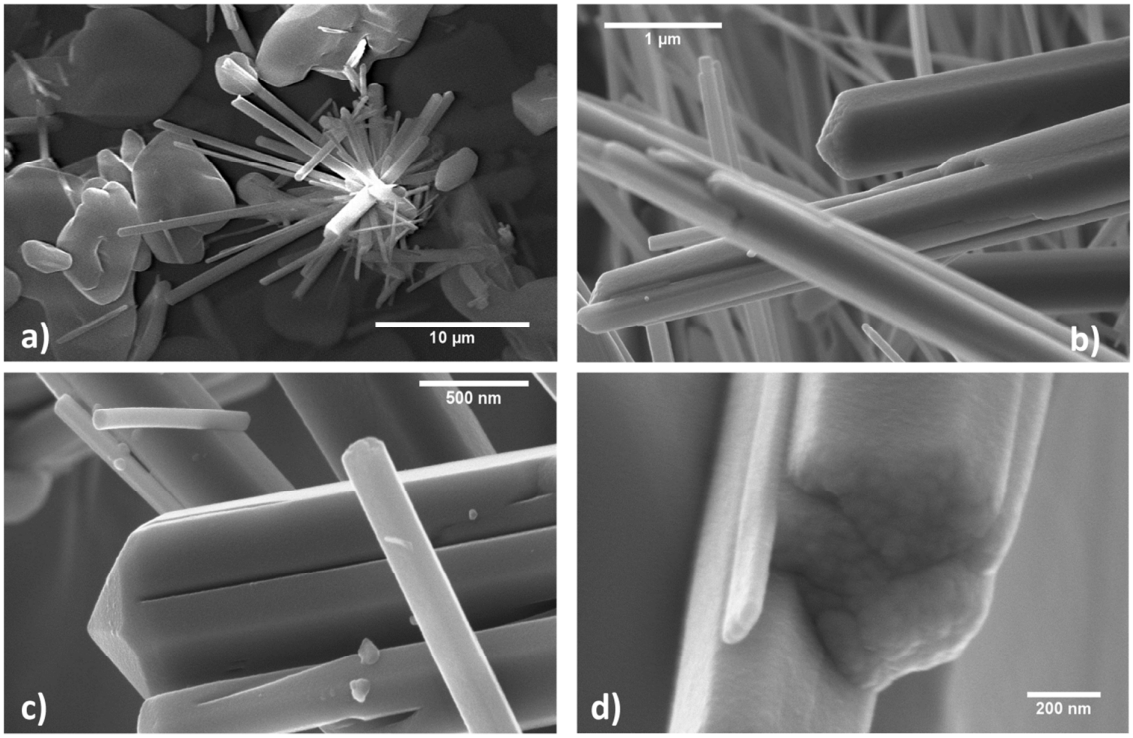

Figure S2. a) CaHAp crystals from monetite hydrolysis after 18 hours of reaction. Abundant monetite is still present. b) CaHAp crystals after 24 hours of reaction. c) After 24 hours, CaHAp crystals show rough surfaces and d) evident twinning both along and perpendicular to the crystal elongation. The roughness tends to disappear increasing the time of growth.

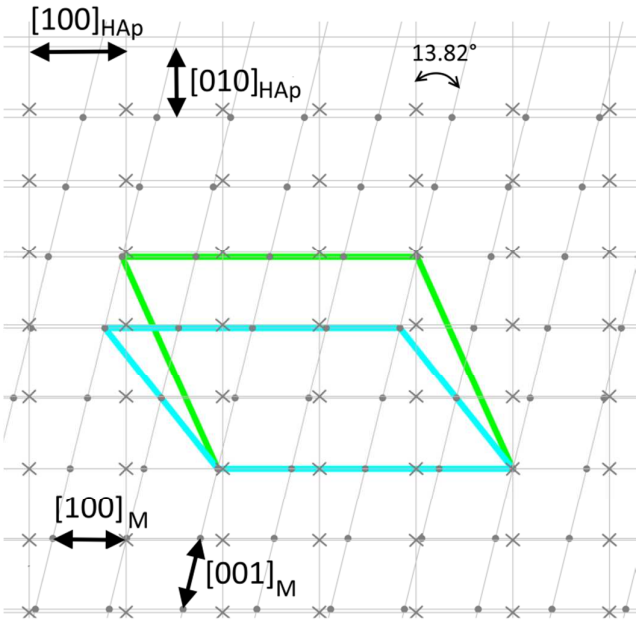

Figure S3. The intermediate coincidence cells of monetite (dots) and HAp (crosses) are depicted.

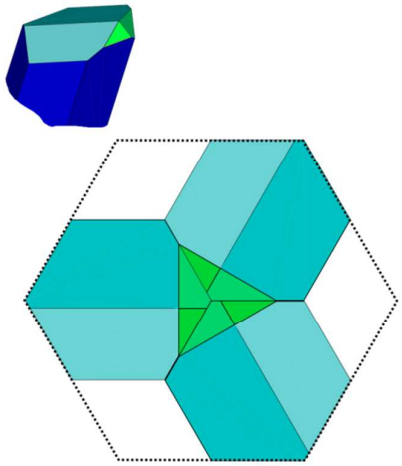

Figure S4. A monoclinic HAp crystal (upper left) twinned around a three-fold axis parallel to the [010] of the crystal (lower image). The green facets belonging to the {010} and {0-10} forms of the monoclinic crystal, define the triangular hole at the apex of the crystal shown in Fig.6b.

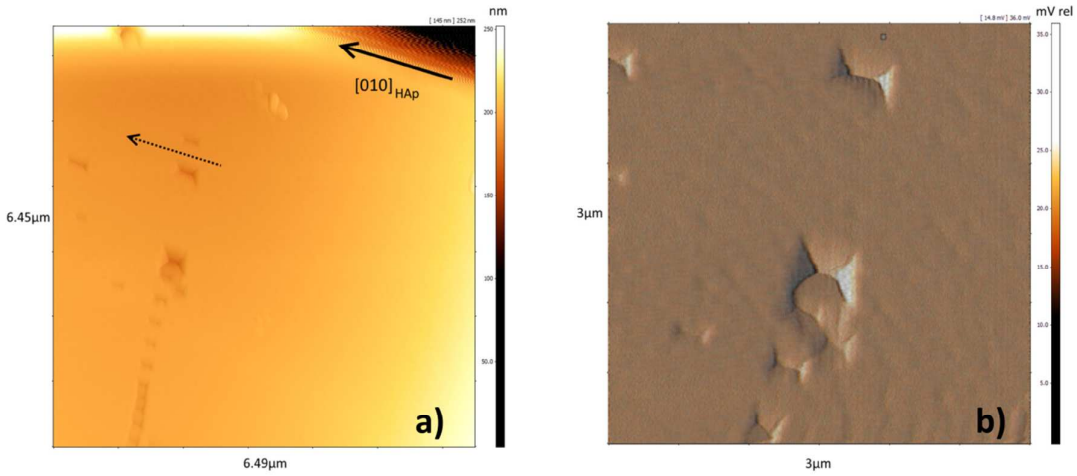

Figure S5. a) AFM topography of the pseudo-prism surfaces showing some evidences of the closure of the stitches originated by twinning. The black arrows are aligned on the [010] direction of the HAp crystal. b) Amplitude image of a selected area. The shape of the pits

reproduce the morphology of the stitches between twinned crystals with OCP pertaining to the {010} form.

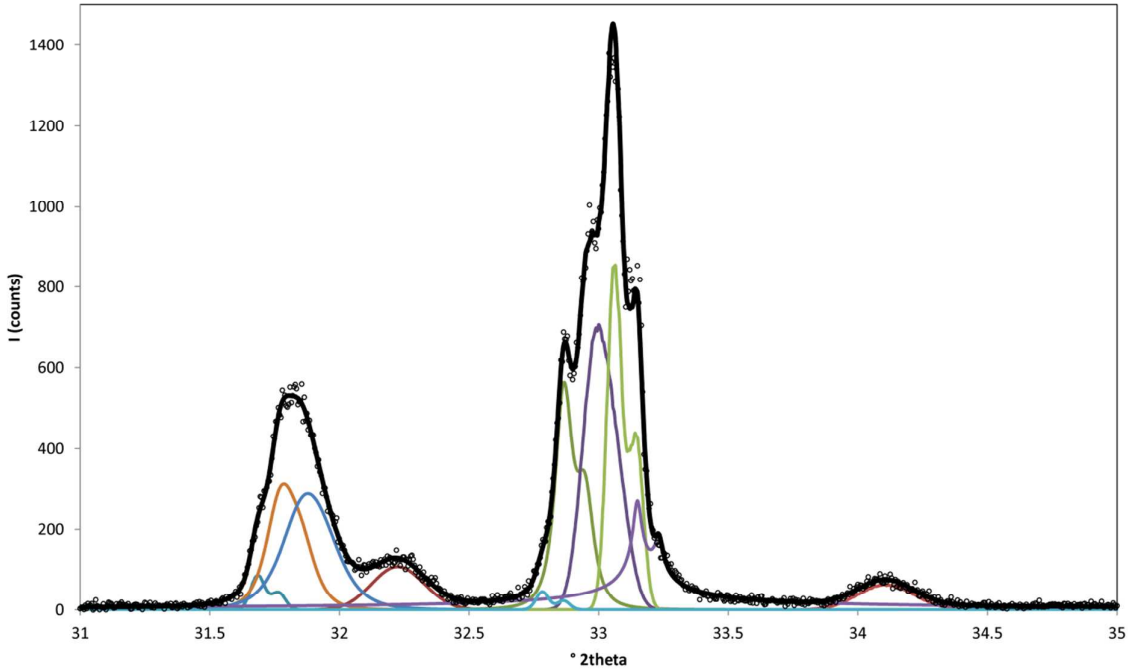

Figure S6. XRD peak decomposition performed using a Pearson VII peak profile modified in order to consider both Cu $K_{\alpha 1}$ and $K_{\alpha 2}$. In the 2theta range between 31.5° and 33.5°, nine peaks can be detected under the 3 peaks of the hexagonal polymorph.