Synthesis of hydroxyapatite substrates: Bridging the gap between model surfaces and enamel

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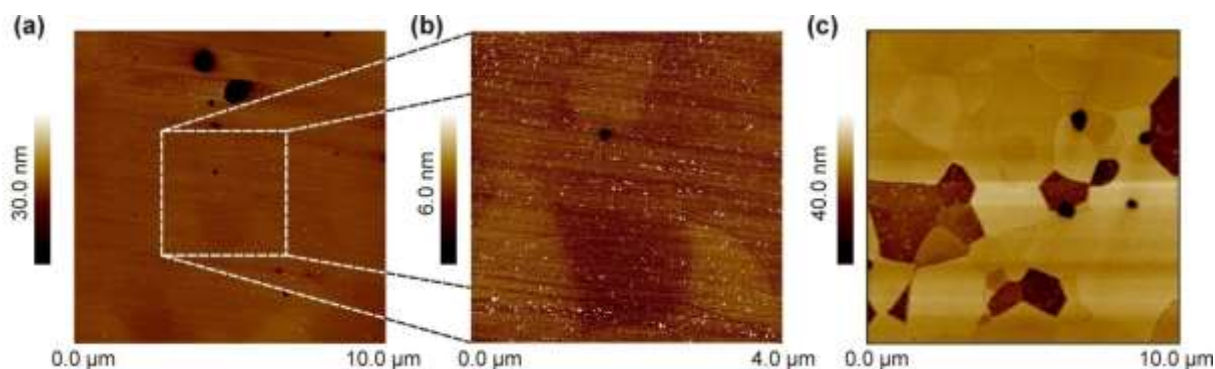
Figure S1: AFM data on PLS prepared samples (a) after final polishing with 30 nm diamond suspension and subsequent ultrasonic bathing in water for 5 minutes. **(b)** Enlarged image of the same area with white dots representing residues from the diamond suspension. The size of the white dots ranges from 25 nm to 50 nm in accordance with the nominal size of 30 nm for the nano-diamonds. **(c)** Similar data from another sample after additional etching in a sodium acetate/acetic acid buffer at pH 4.5 for 10 s. Compared to the not etched samples, the difference in domain heights (i.e. without pores and polishing residues) has increased by more than one order of magnitude.
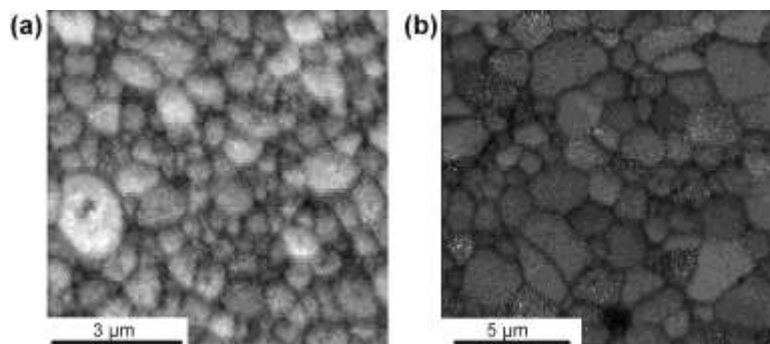
Figure S2: Grey scale image quality maps of the EBSD data (a) from the FAST sample in Figure 5b and (b) from the PLS sample in Figure 5e. Irrespective of an absolute quality scaling, diffraction appears homogeneous throughout the individual domains.

	HAP powder	FAST sample	PLS sample
D_{volume} [a]	61 nm (002)	232 nm (002)	670 nm (002)
	56 nm (004)	222 nm (004)	598 nm (004)
D_{volume} [b]	79 nm	256 nm	477 nm
D_{volume} [c]	86 nm	–	–
$\langle \varepsilon^2 \rangle$ [b]	0.22 %	0.009 %	0.012 %
$\langle \varepsilon^2 \rangle$ [c]	0.30 %	n.a.	n.a.
μ [c]	74.13 nm	n.a.	n.a.
σ [c]	1.23	n.a.	n.a.

Table T1: Volume-weighted average crystallite size D_{volume}, strain $\langle \varepsilon^2 \rangle$, mean crystallite size μ and asymmetry parameter σ as obtained from analysis of the XRD data in Fig. 3 and Fig. 7 using (a) the Scherrer method, (b) the Williamson-Hall method and (c) a modified Warren-Averbach method. The values in parentheses in the first row denote the reflections used for analysis.