

Supplementary Information for

**Superior Pre-Osteoblast Cell Response of Etched Ultrafine-Grained
Titanium with a Controlled Crystallographic Orientation**

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Supplementary method

Grain size measurement.

The grain size was measured with electron back-scatter diffraction (EBSD) and transmission electron microscopy (TEM). To investigate the grain sizes of the as-received and annealed specimens, EBSD (OIM4000, EDAX Japan K.K., Japan) was used with field emission scanning electron microscopy (FESEM: XL30S FEG, Philips electron optics B.V., Netherlands). Samples were prepared by mechanical polishing down to 0.25 μm using diamond pastes and electro-etched in an etchant of 6% perchloric acid, 35% butyl alcohol, and 59% methanol by volume. EBSD orientation image maps were acquired on the normal plane of the samples with a total of at least 2000 grains. The grain sizes were determined with orientation image microscopy (OIM) software (TSL OIM analysis 5.2, EDAX Inc., USA). The grain size of the HPT-processed specimen was examined by TEM (JOEL JEM-2200FS, JEOL, USA) on a jet-polished 3 mm disk thin foil.

Supplementary Figures

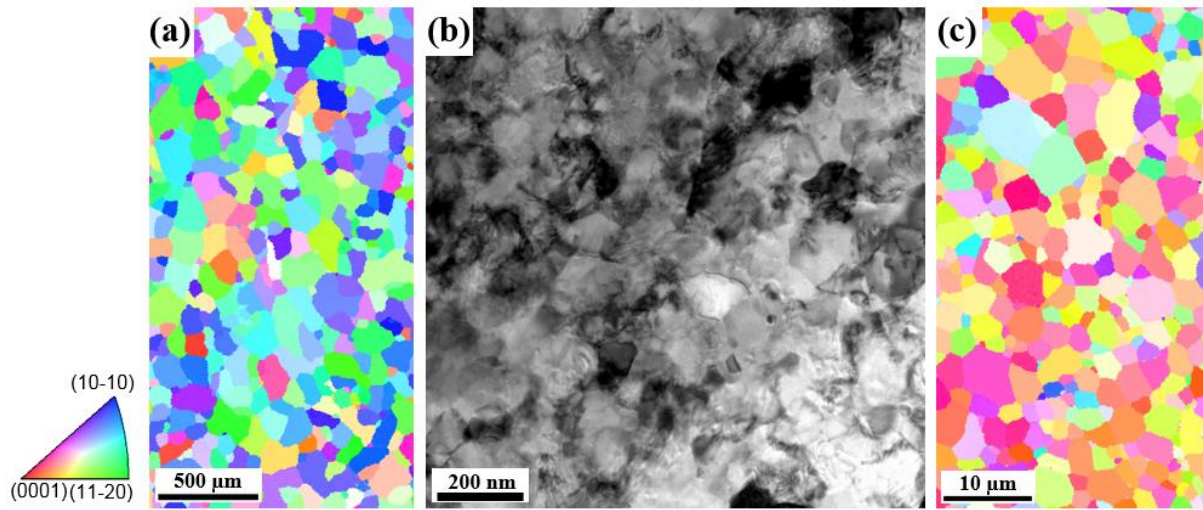


Figure S1. Microstructures of CP-Ti samples

EBSD micrographs of (a) the as-received and (c) HPT + annealed samples and (b) STEM micrograph of the HPT-processed sample