minerals

MDPI

Supplementary Materials

Columnar structure of claw denticles in the coconut crab, *Birgus latro*

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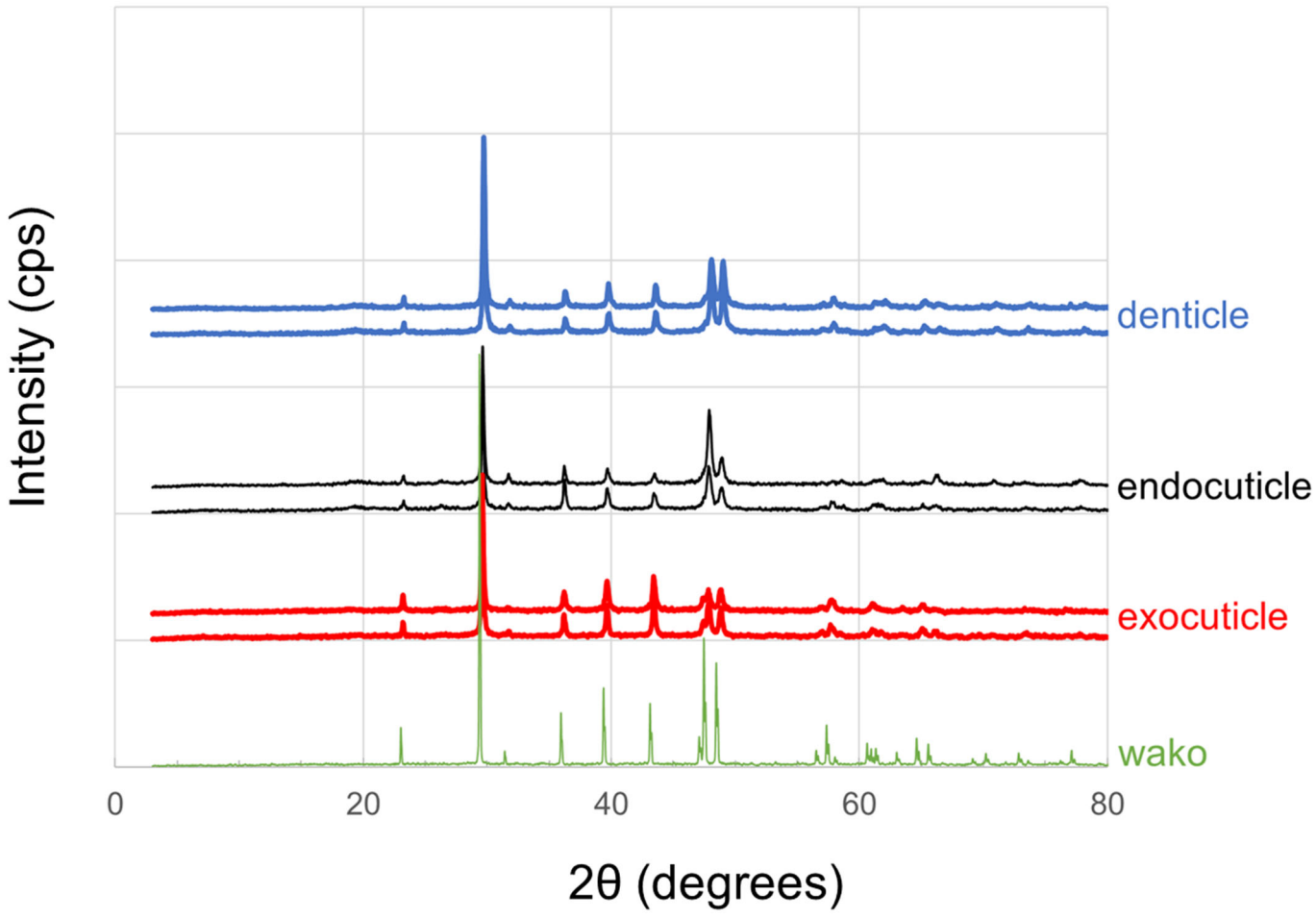

Figure S1. X-ray diffraction (XRD) patterns of the denticle, exocuticle and endocuticle of the claw of male coconut crab (body weight: 610 g, thoracic length: 44.5 mm), including the standard x-ray diffraction of the calcite crystal, wako (FUJIFILM Wako Pure Chemical Co.). Here, XRD analysis at two positions for each layer was performed using commercial X-ray diffractometer SmartLab (Rigaku Co. Ltd., Tokyo, Japan).

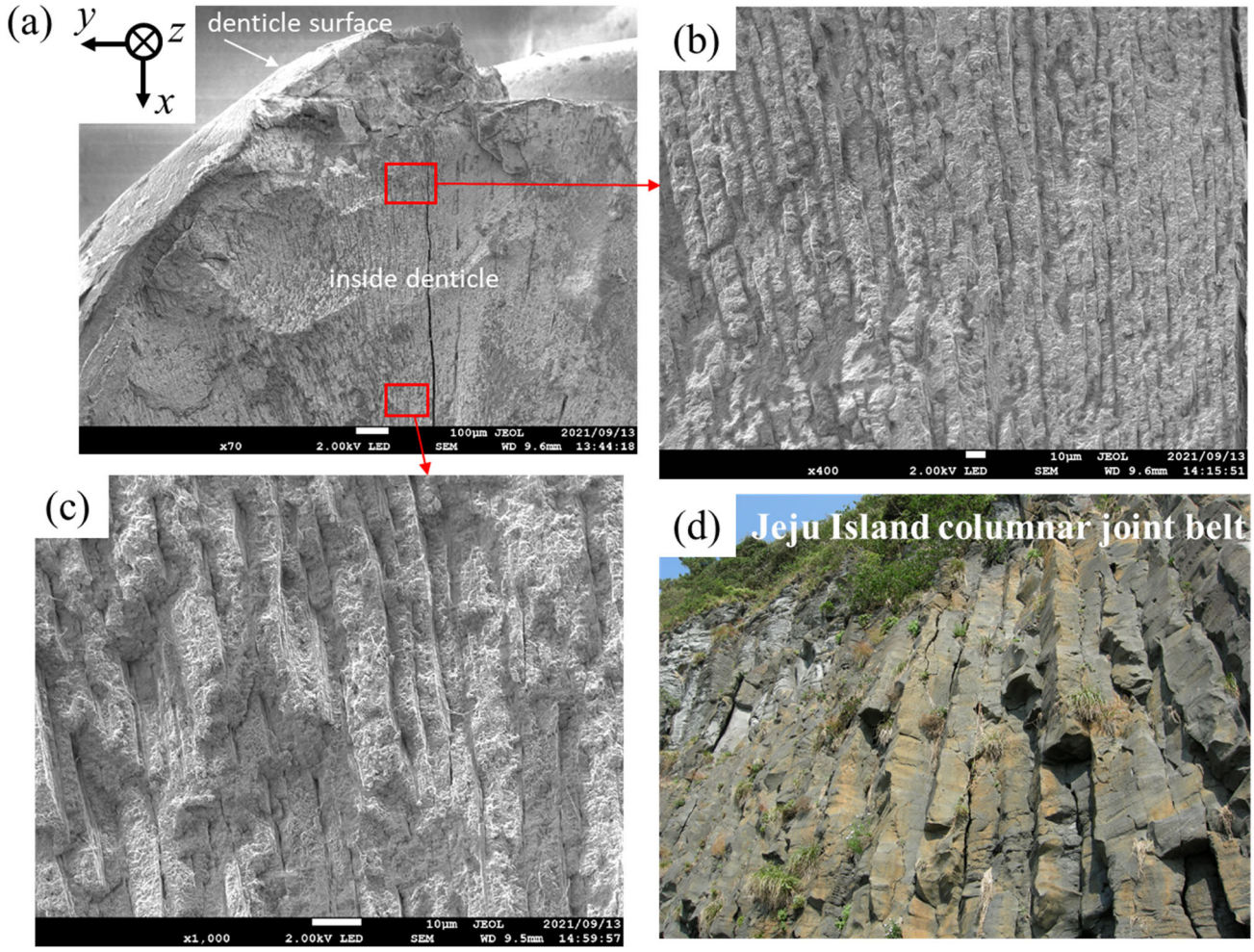

Figure S2. SEM micrograph of (a) a fracture surface of the denticle. (b,c) Enlarged SEM micrographs of the area enclosed by rectangles in (a). (d) A columnar joint belt on a Jeju Island, photographed in 2007 by one in the authors, T. Inoue.

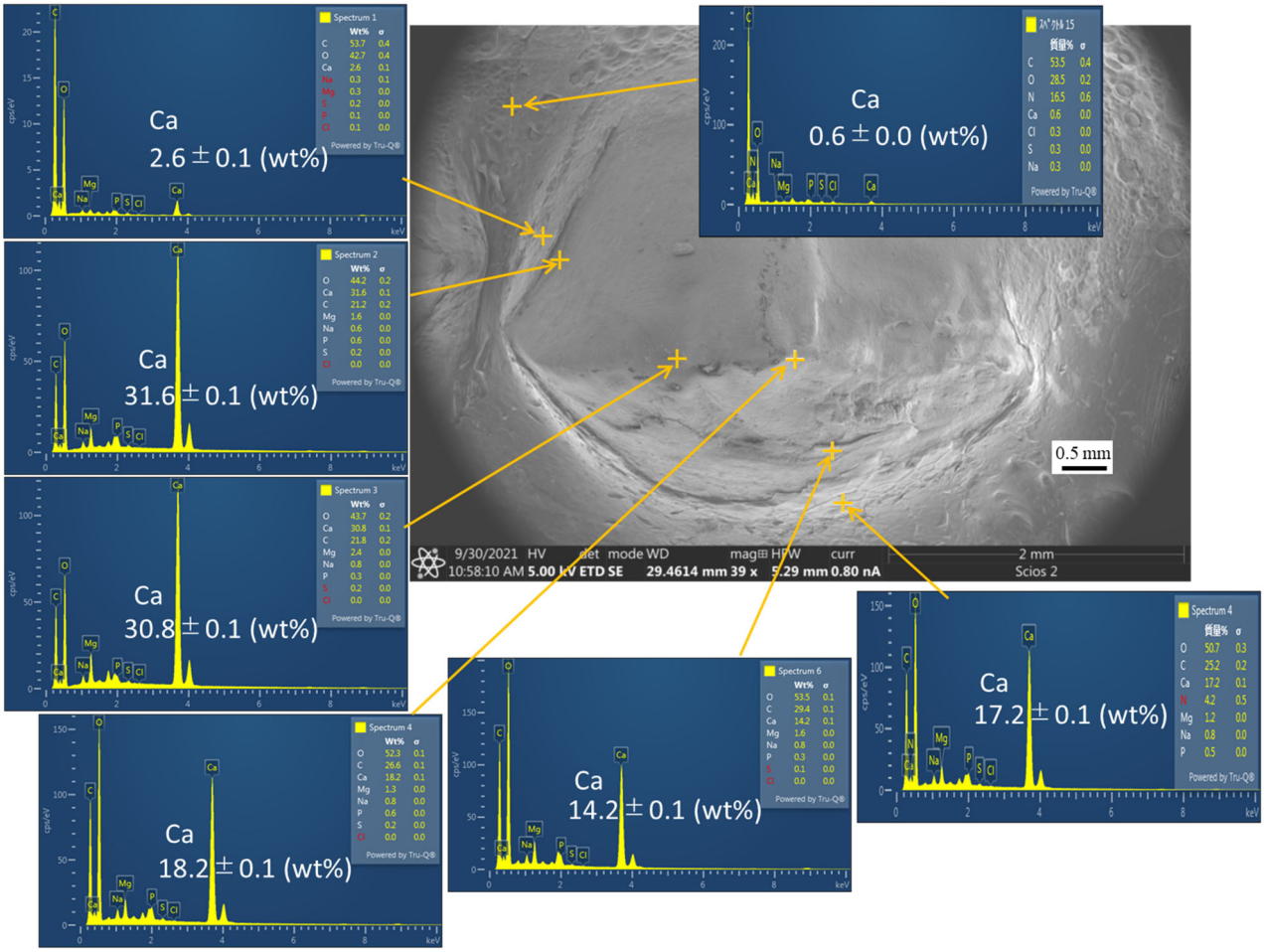

Figure S3. SEM micrograph of the denticle surface shown in Fig. 5(c) and the point spectrum at some sites measured by energy-dispersive X-ray spectroscopy (EDS).

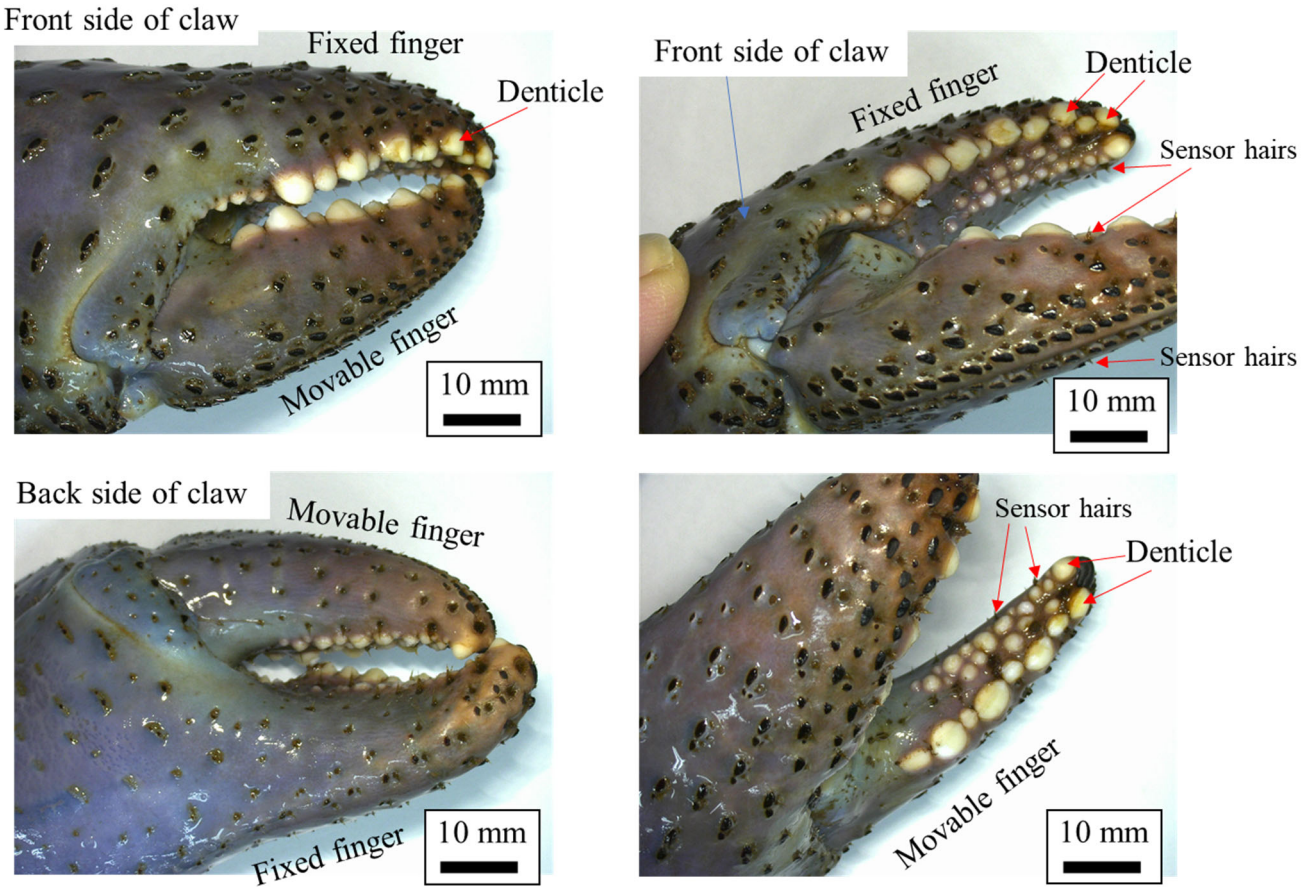

Figure S4. Heterogeneous/irregular denticles (white) of the left claw's fixed finger of the coconut crab of male (body weight: 1150 g, thoracic length: 52.7 mm).