

# Supporting Information

## Recovering and exploiting aragonite and calcite single crystals with biologically controlled shapes from mussel shells

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**Figure S1.** Camera images of mussel shell showing periostracum in the black regions and nacre in the white regions (A) and after bleaching with NaClO 5% v/v solution (B).

p. S2

**Figure S2.** FTIR spectra of mussel shell (A), nacre (B), prismatic layer and

myostracum (C) and isolated prismatic layer (D). p. S2

**Figure S3.** Thermogravimetric analysis (TGA) profiles of bleached mussel

shell (A), nacre (B), prismatic layer and myostracum (C)

and isolated prismatic layer (D). p. S3

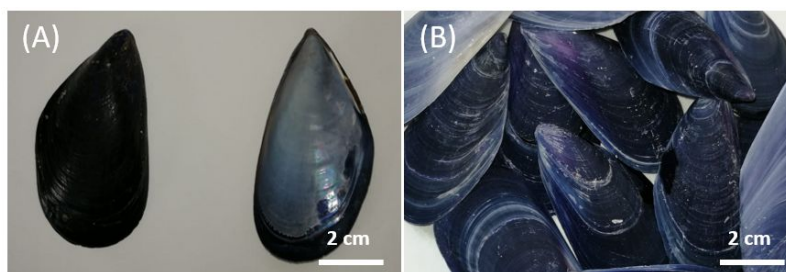
**Figure S4.** Optical microscopy images of isolated calcite fibers (A and B) and nacre

tablets (C and D). p. S3

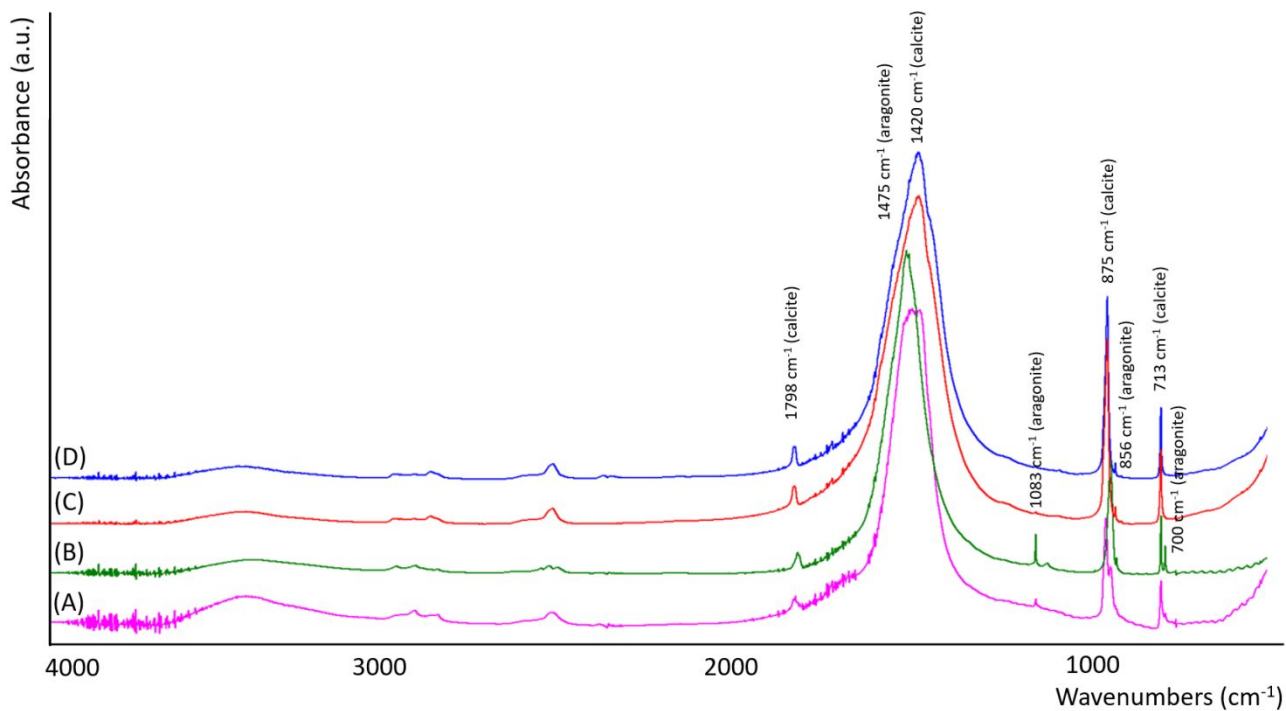
**Figure S5.** High magnification SEM images of a single crystal of (A)

fibrous calcite and (B) tablet nacre. p. S4

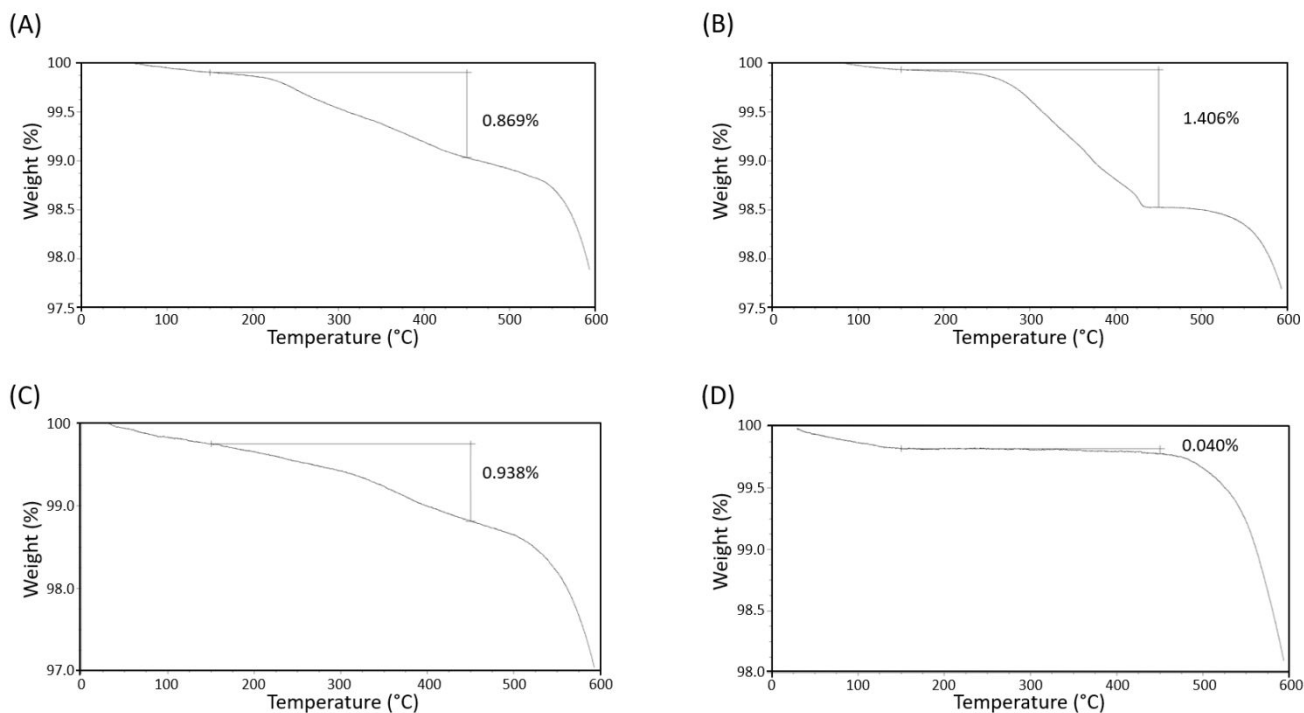
**Table S1.** Size distribution of isolated prismatic layer (A) and nacre (B). p. S4



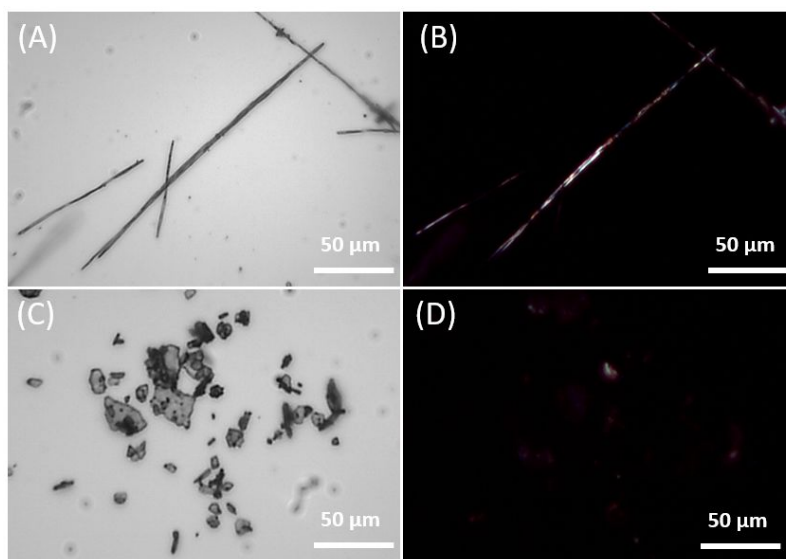
**Figure S1.** Camera images of mussel shell showing periostracum in the black regions and nacre in the white regions (A) and after bleaching with NaClO 5% v/v solution (B).



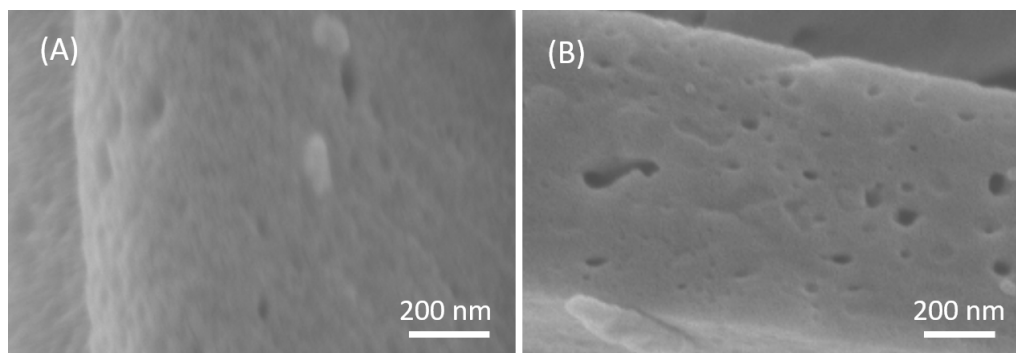
**Figure S2.** FTIR spectra of mussel shell (A), nacre (B), prismatic layer and myostracum (C) and isolated prismatic layer (D).



**Figure S3.** Thermogravimetric analysis (TGA) profiles of bleached mussel shell (A), nacre (B), prismatic layer and myostracum (C) and isolated prismatic layer (D). The temperature range considered to estimate the content of intraskeletal organic matrix was between 150°C and 450°C.



**Figure S4.** Optical microscopy images of isolated calcite fibers (A and B) and nacre tablets (C and D). B and D are images A and C, respectively, observed using polarized light.



**Figure S5.** High magnification SEM images of the surface of single crystals of (A) fibrous calcite and (B) tablet nacre.

**Table S1.** Size distribution of isolated prismatic layer (A) and nacre (B).

Sample	D <sub>10</sub> (μm)	D <sub>50</sub> (μm)	D <sub>90</sub> (μm) <sup>#</sup>
A	1.202 ± 0.004	3.156 ± 0.009	9.402 ± 0.037
B	3.182 ± 0.008	7.212 ± 0.008	13.76 ± 0.05

<sup>#</sup> D<sub>90</sub> indicates that 90% of particles have a diameter below the reported value.