

SUPPORTING INFORMATION

Mussel shell-derived macroporous 3D scaffold: characterization and optimization study of a bioceramic from circular economy

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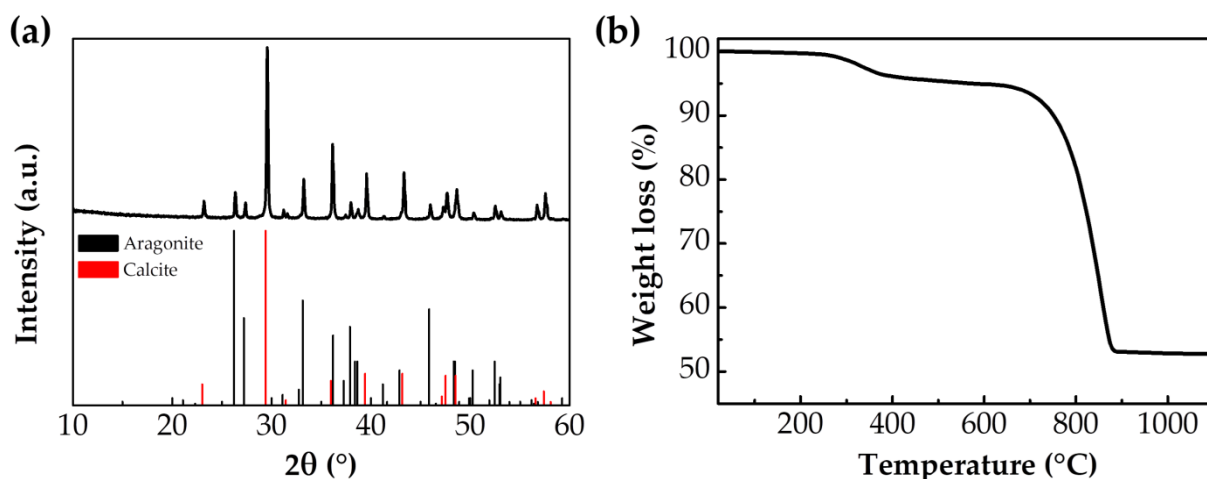


Figure S1. (a) XRD pattern and (b) TGA curve of raw mussel shells. In panel (a) the reference pattern of calcite (ASTM Card file No. 05-0586) and aragonite (ASTM Card file No. 041-1475) are also showed.

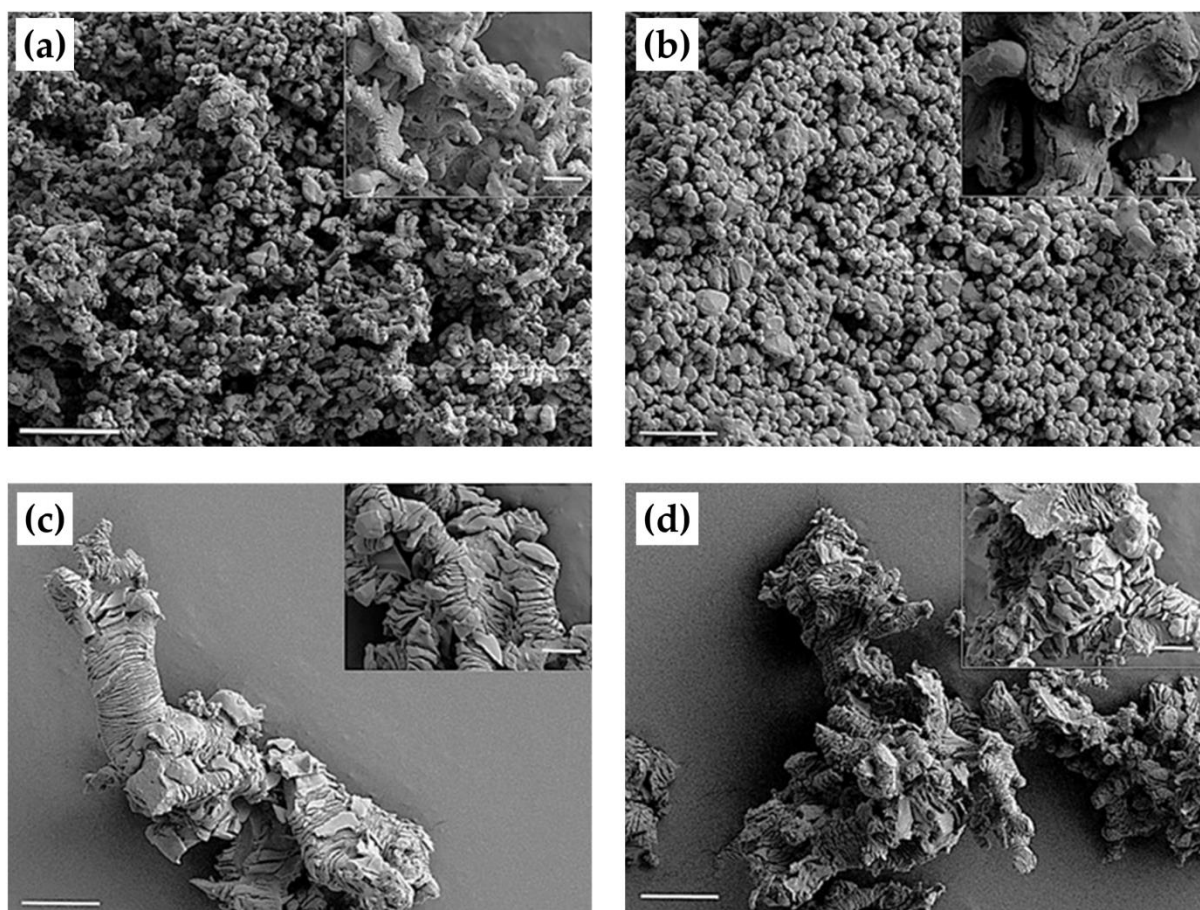


Figure S2. SEM micrographs of CaO samples prepared with different treatments, (a) S_A_700, (b) S_A_1000, (c) S_N_700, (d) S_N_1000 [main images: magnification 5kX, scale bar 10 μm; insert: magnification 25 kX, scale bar 1 μm].

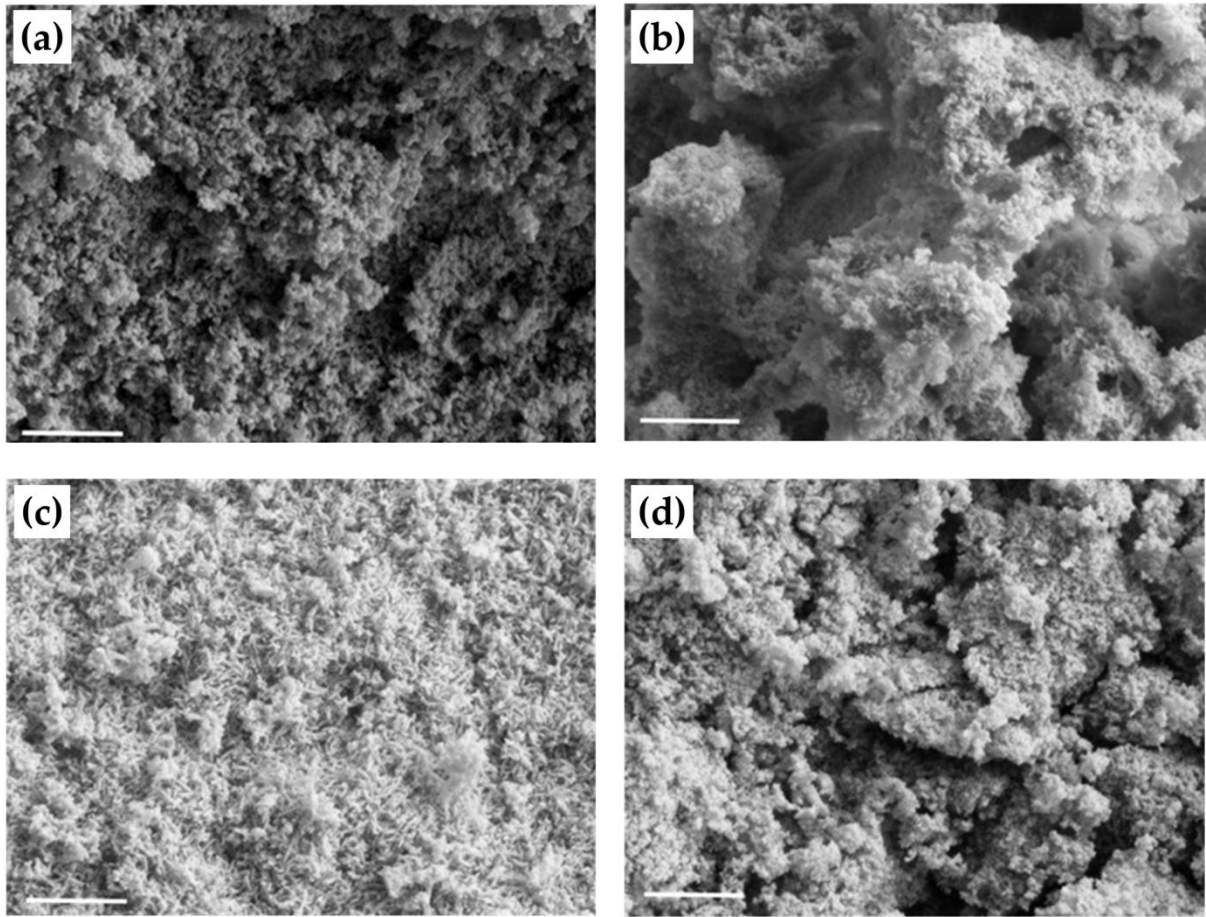


Figure S3. SEM micrographs of HA samples prepared with different protocols; (a) HA_1, (b) HA_2, (c) HA_3, (d) HA_4 [magnification 50 kX, scale bar 1 μm].

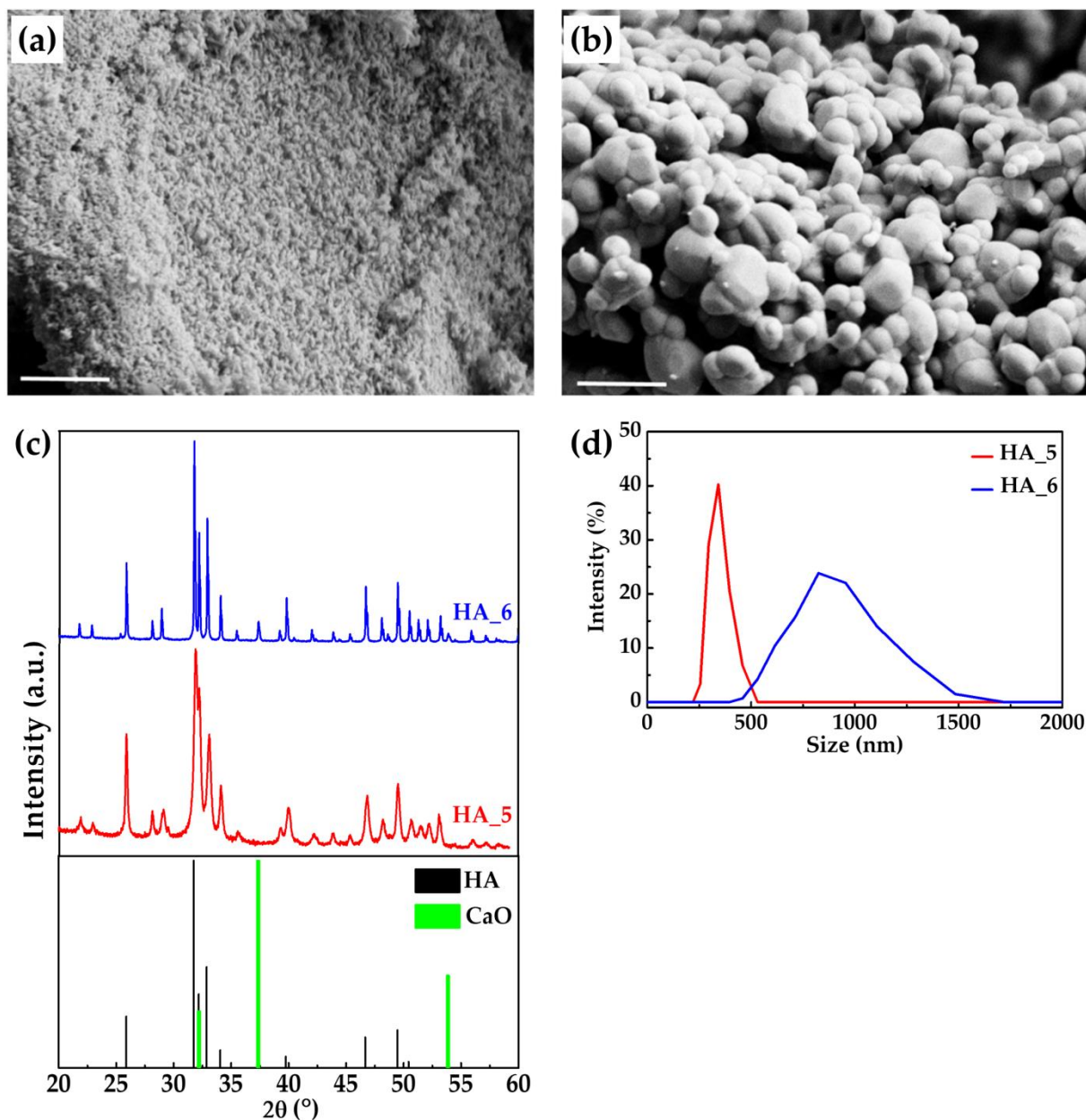


Figure S4. SEM micrographs of HA sample prepared at pilot scale (HA_5) (a) before and (b) after calcination at 1000 °C for 1 h (HA_6) [magnification 50 kX, scale bar 1 μ m]; (c) XRD patterns of HA_5 and HA_6 samples, XRD pattern of standard of HA (ASTM Card file No. 09-0432) and CaO (ASTM Card file No. 37-1497) is also showed; (d) size distribution of HA_5 and HA_6 samples suspended in Dolapix 4 wt%.

Table S1. Chemical composition of the raw mussel shells and CaO samples

Samples	Ca (wt%)	Mg (wt%)	Na (wt%)	P (wt%)	Se (wt%)	Sr (wt%)
Raw mussel shells	34.62±0.74	0.11±0.01	0.55±0.04	0.46±0.04	0.16±0.21	0.09±0.01
S_A_700	42.85±1.90	0.09±0.01	0.29±0.03	0.04±0.03	0.71±0.23	0.10±0.01
S_A_1000	48.26±0.40	0.10±0.01	0.16±0.06	0.05±0.01	0.59±0.34	0.11±0.01
S_N_700	40.70±3.73	0.14±0.01	0.39±0.10	0.17±0.06	0.49±0.15	0.11±0.01
S_N_1000	43.98±0.86	0.12±0.01	0.20±0.03	0.02±0.01	0.37±0.22	0.11±0.01

List of elements analyzed and their relative LOD (Limit of detection of the element in the sample):

Al, As, Ba, B, Be, Ca, Cd, Co, Cu, Cr, Fe, Mg, Mn, Na, Ni, P, Pb, Se, Sr, V, Zn.

LOD was 1 ppm for As, B, Be, P, Pb, Se

LOD was 0.05 ppm for Al, Ba, Ca, Cd, Co, Cu, Cr, Fe, Mg, Mn, Na, Ni, Sr, V, Zn