

**Intrinsic size effect in scaffolded porous calcium silicate particles
and mechanical behavior of their self-assembled ensembles**

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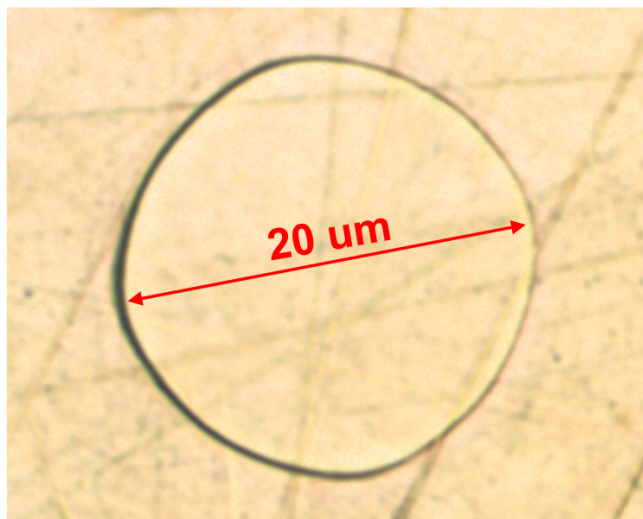


Fig. S1 Residual impression on a copper substrate after flat-punch indentation.

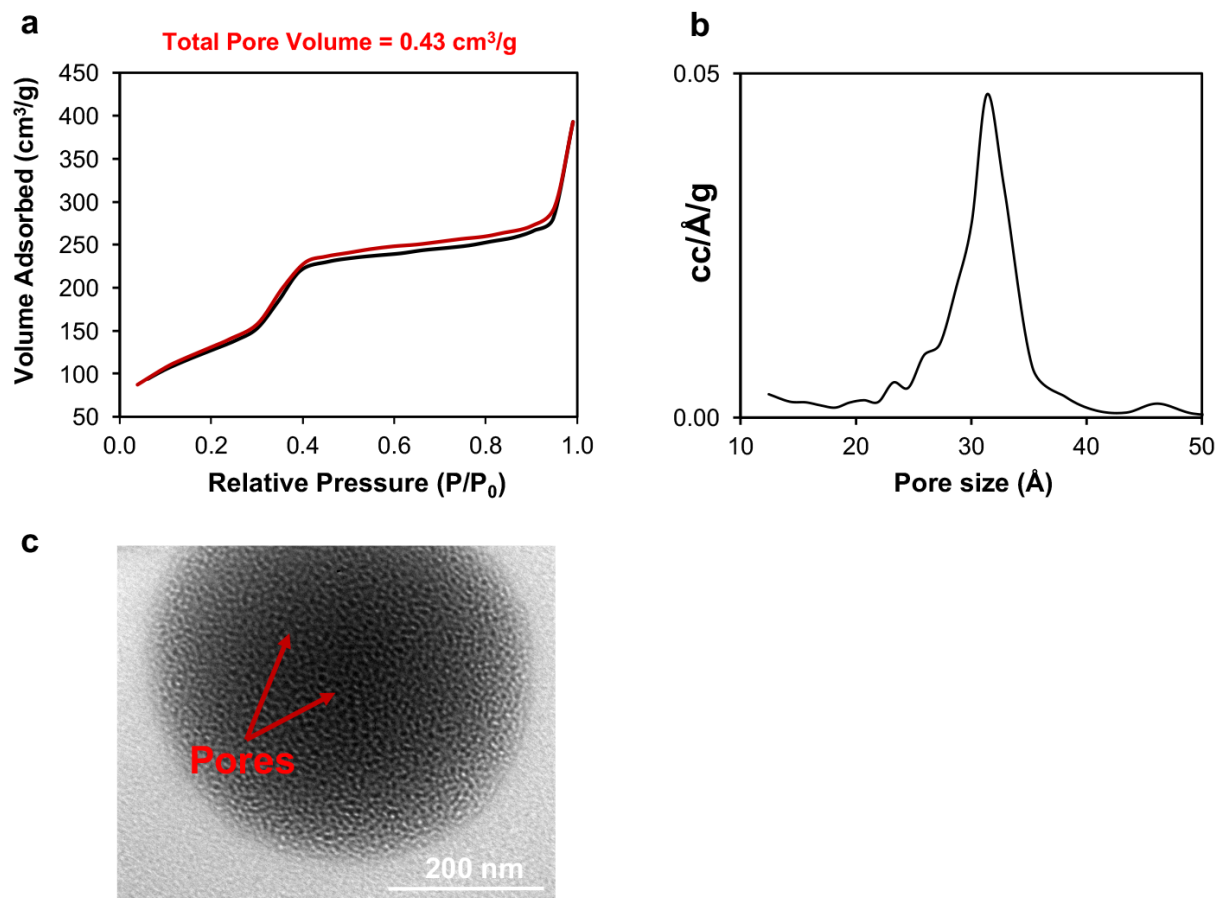


Fig. S2 a) The representative nitrogen adsorption-desorption curves for the calcium-silicate porous particles. b) The typical distribution of pore size acquired using Barrett-Joyner-Halenda (BJH) analysis.¹ c) TEM image of a typical calcium silicate porous particle.

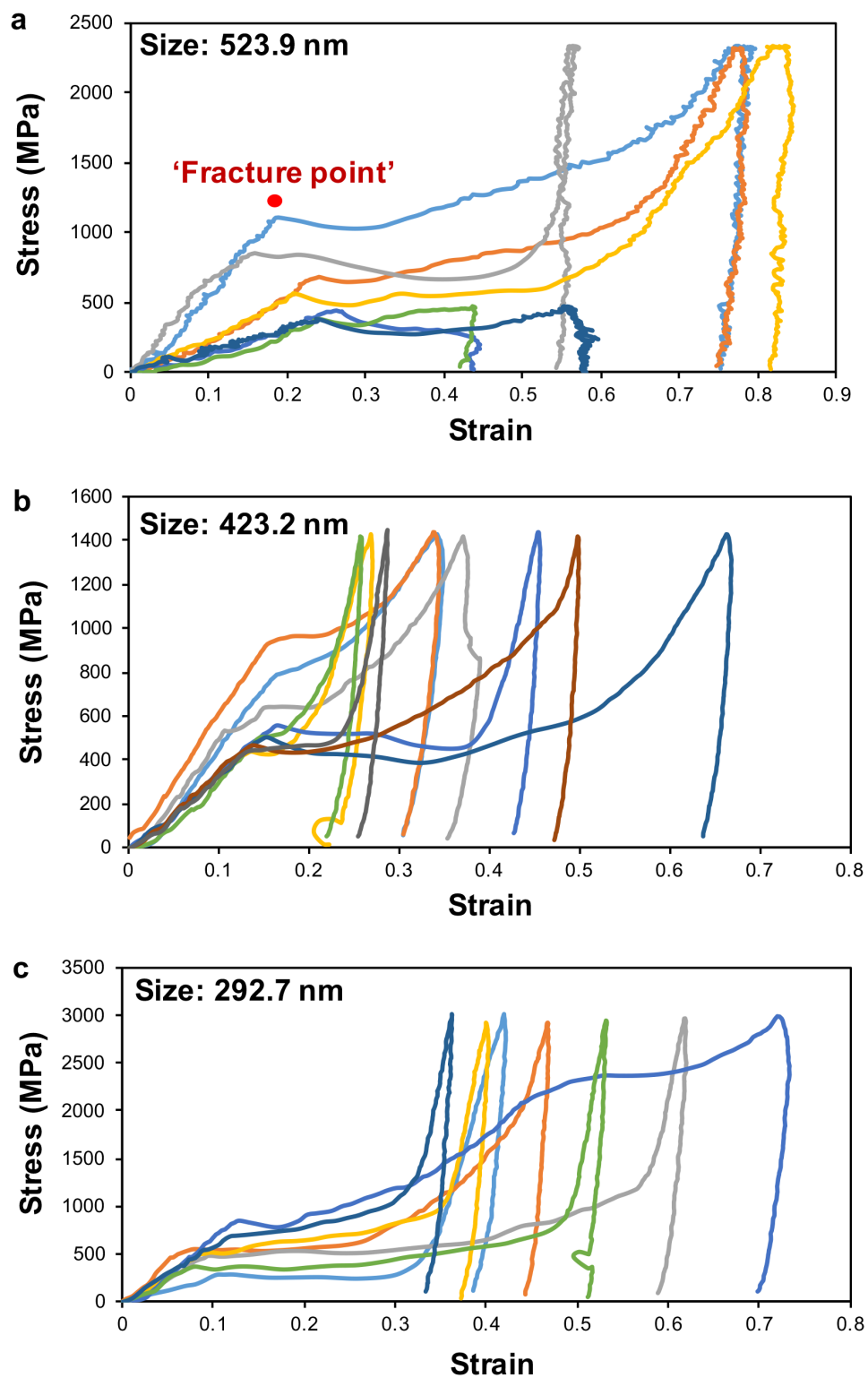


Fig. S3 Stress-strain curves for the size of a) 523.9 nm b) 423.2 nm and c) 292.7 nm performed beyond the fracture points until the indenter hit the glass substrate.

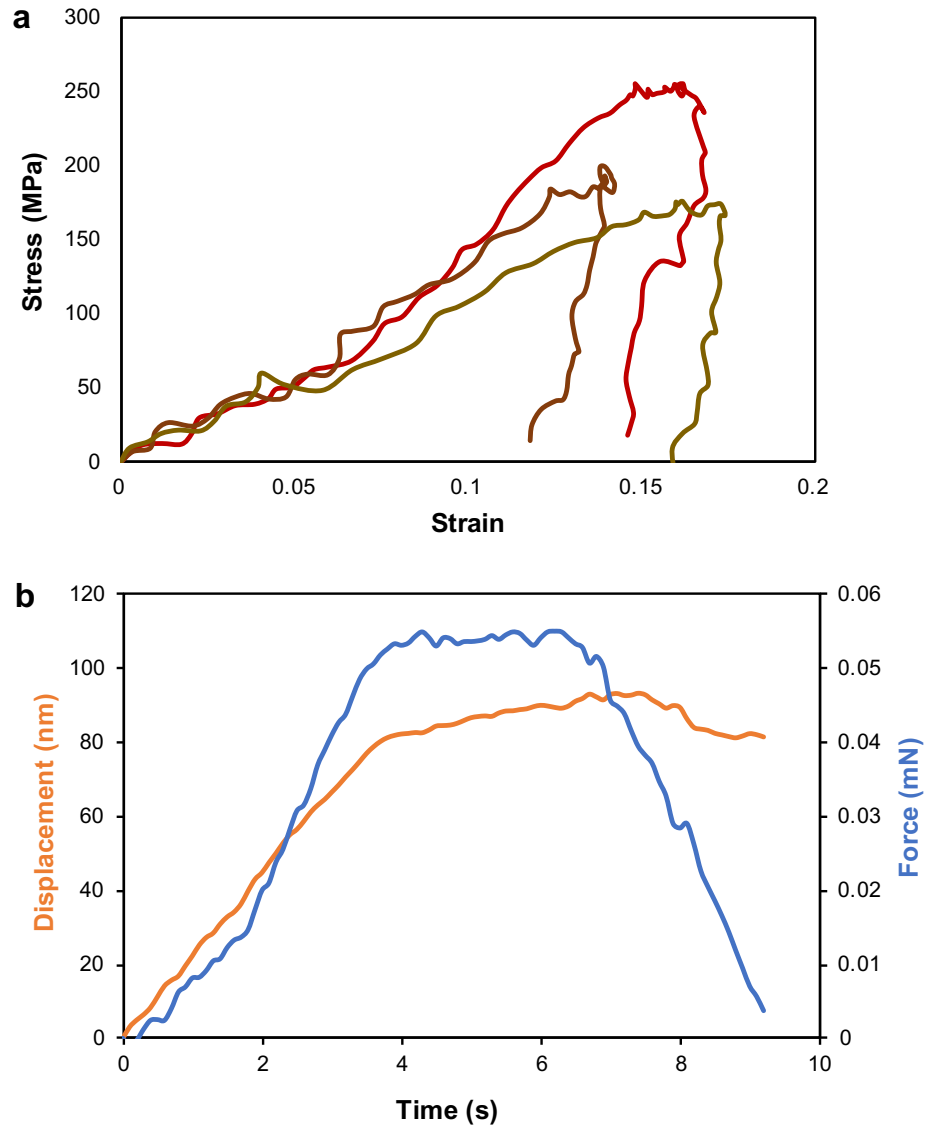


Fig. S4 a) Displacement-controlled indentations performed on three particles with the size of 523.9 nm before the fracture points are reached. b) Representative Force-Displacement-Time graph for the displacement-controlled indentations.

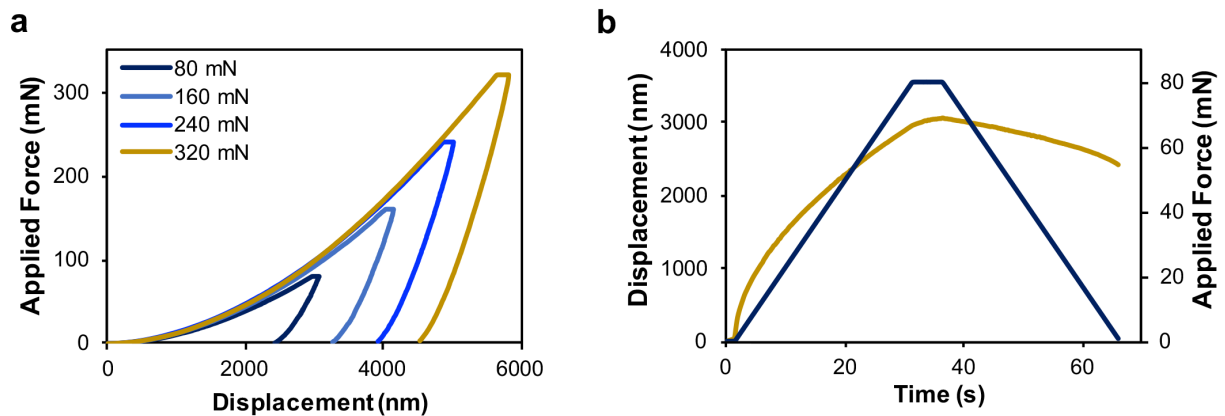


Fig S5. a) Force-displacement curves acquired from nanoindentation on the compacted sample at four different applied forces. b) Force-displacement-time curve performed with the applied force of 80 mN.

Reference

1. Hwang, S. H.; Miller, J. B.; Shahsavari, R., Biomimetic, Strong, Tough, and Self-Healing Composites Using Universal Sealant-Loaded, Porous Building Blocks. *Acs Appl Mater Inter* **2017**, *9* (42), 37055-37063.