Electronic Supplementary Material (ESI) for Lab on a Chip.

Supporting Information for

Fabrication of Syntactic Foam Fillers via Integrated on/off-Chip Microfluidic Methods for Optimized Geopolymer Composites

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Keywords**:** Syntactic foam, Fillers, Droplet microfluidics, Osmotic regulation, Geopolymer

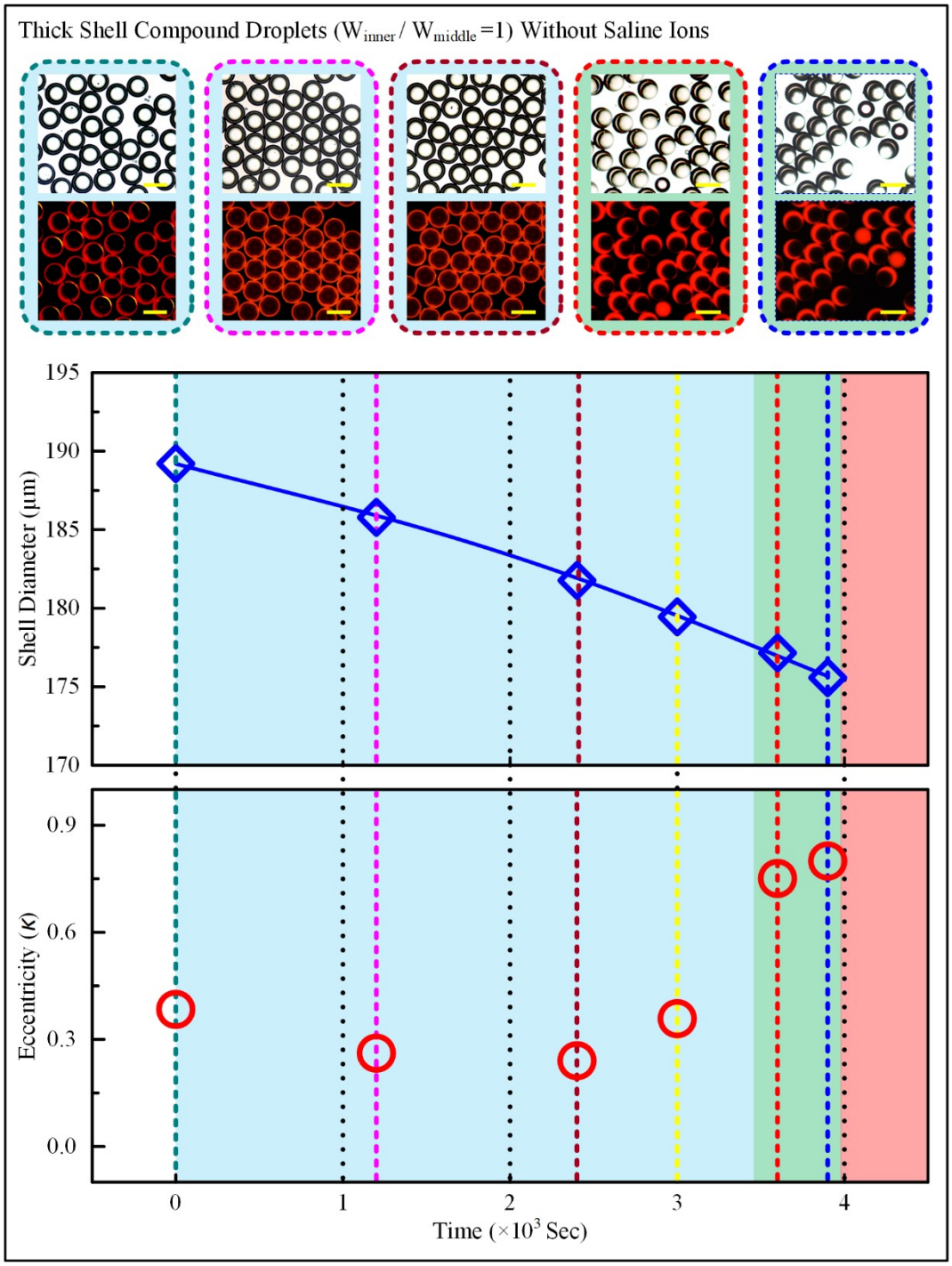

Figure. S1. Relationships between the parameters of droplets and the preservation time. The inset figures circled in dashed frames are optical/ fluorescent microscope images of droplets. Corresponding scale bars are 200 μm.

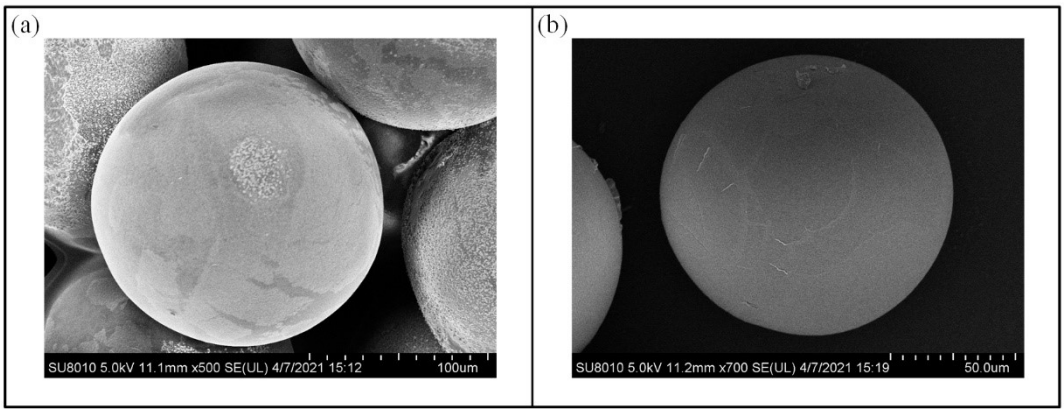

Figure. S2. (a) SEM image of the solidified droplets after photopolymerization. (b) SEM image of the solidified droplets after calcination.

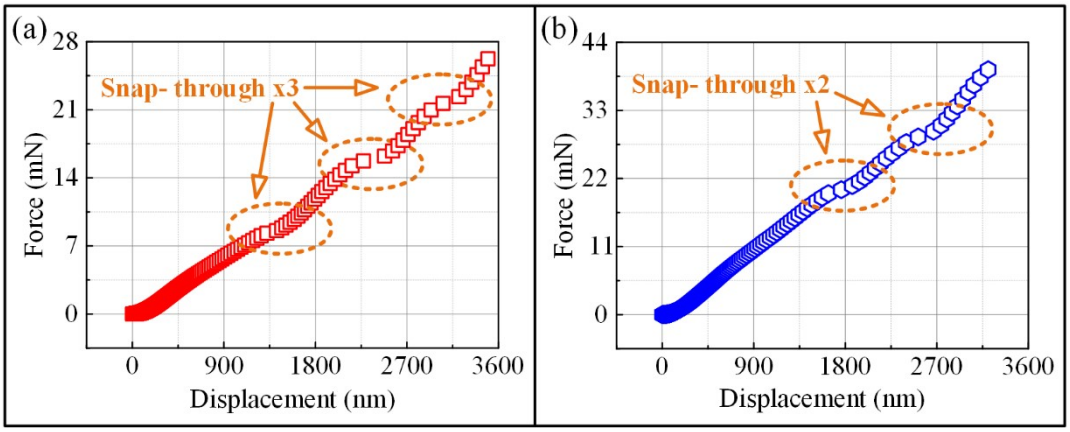

Figure. S3. (a) Nanoindentation results of SFF with heterogeneous shell thickness. (b) Nanoindentation results of SFF with homogeneous shell thickness.

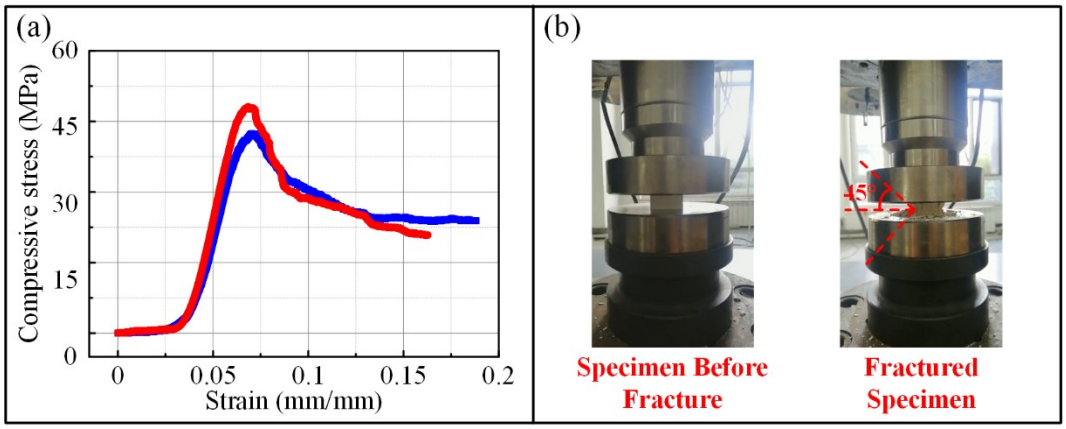

Figure. S4. (a) Typical compression stress-strain curves of the GSFs containing 40% volume fraction of SFFs. (b) Snapshots of the same specimen during compression

experiment.

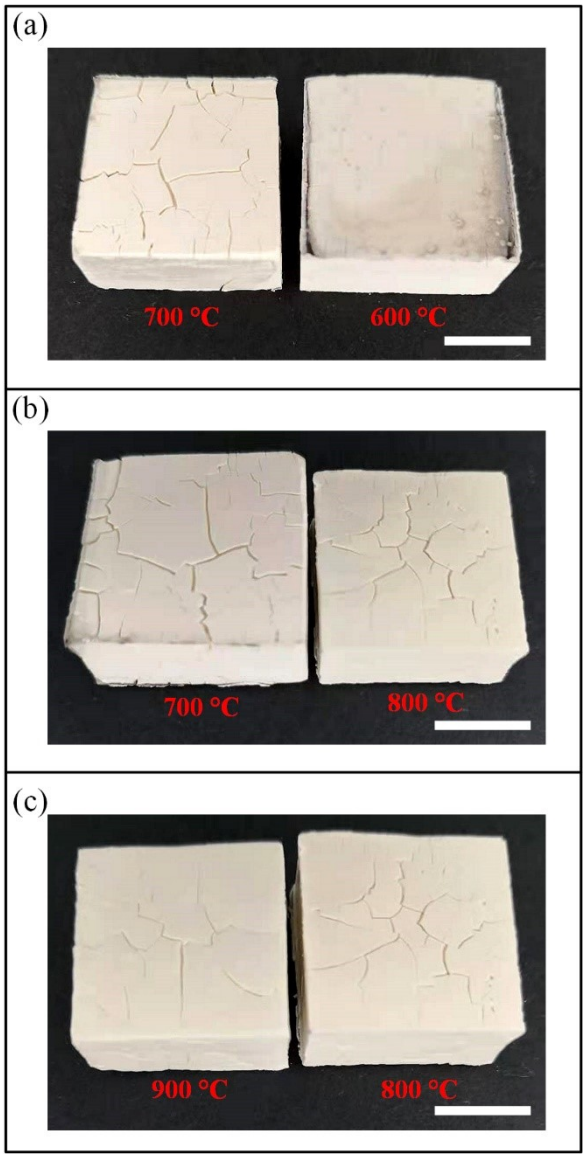

Figure. S5. Dimension comparison of GSFs after exposure to different temperatures. Scale bars are 10 cm.

Supporting Videos

Movie. S1. Part of the recorded compression process of geopolymer based syntactic foam.

Movie. S2. Combustion experiment of epoxy resin.

Movie. S3. Combustion experiment of geopolymer based syntactic foam.