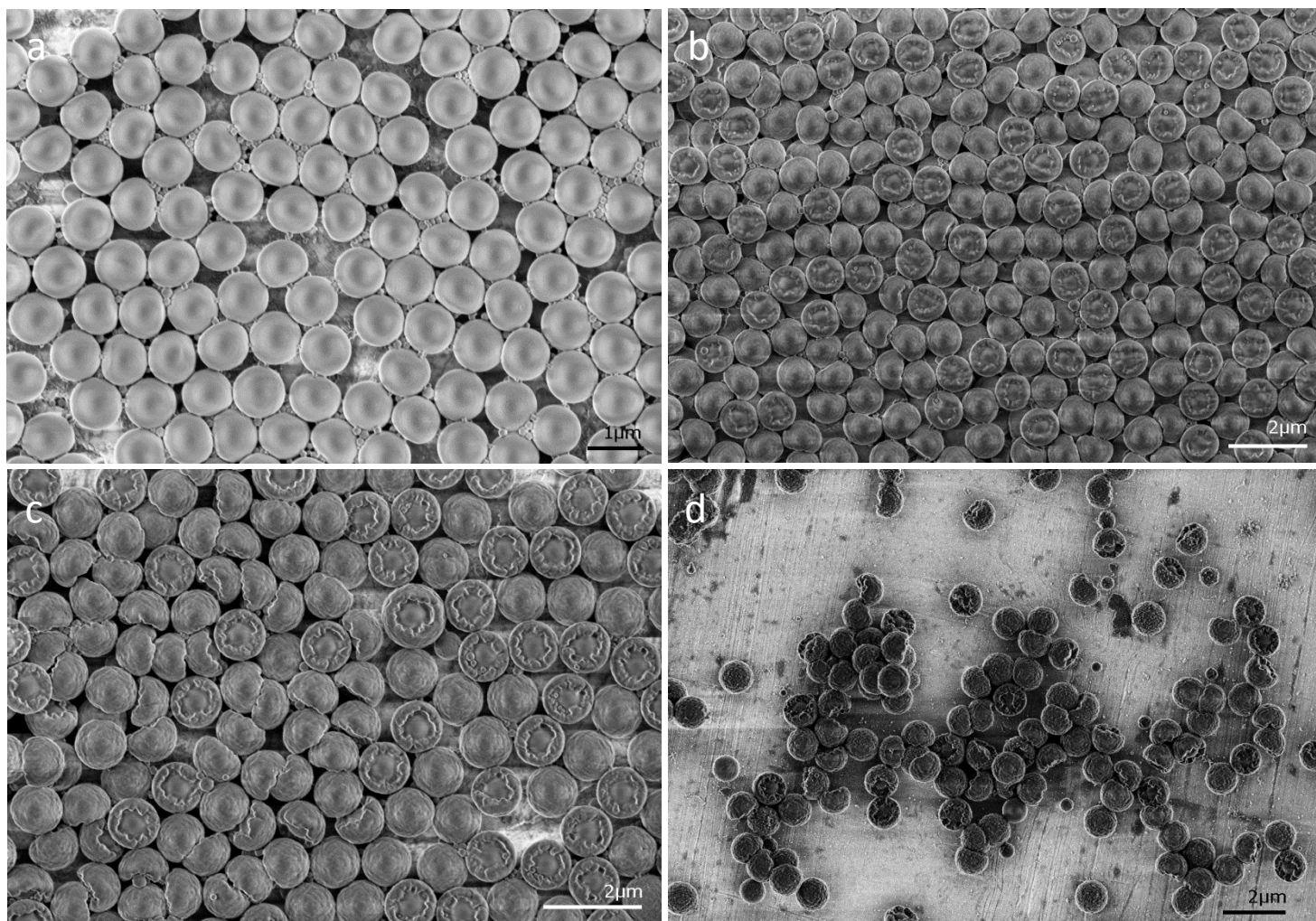
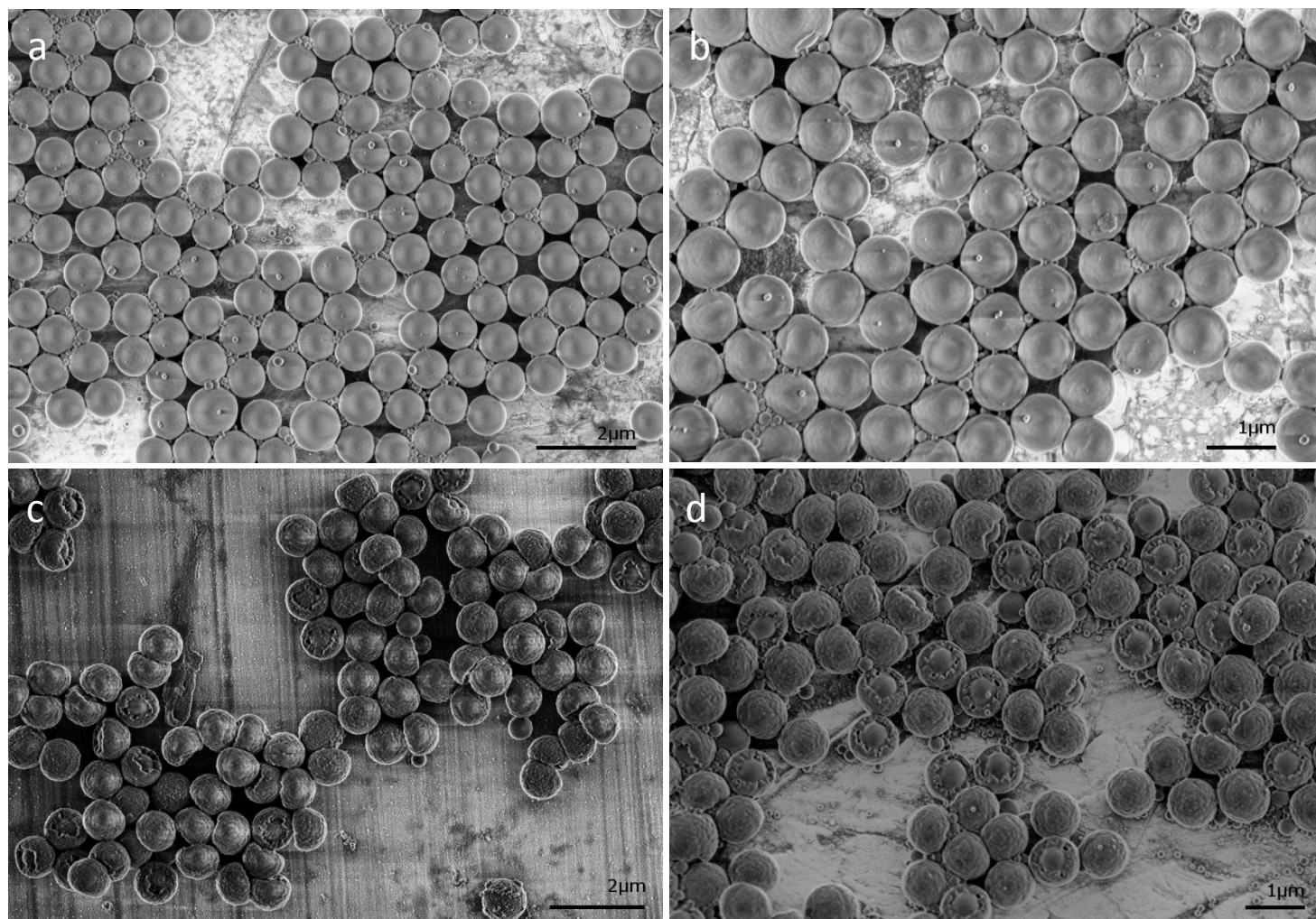


### Electronic supplementary information (ESI)



**Figure S1.** Monodisperse collapsed particle shapes prepared via single-stage swelling and polymerization of 2% DVB crosslinked seeds. (a) 10%, (b) 20%, (c) 30%, and (d) 40% DVB in the swelling monomer.





**Figure S2.** Monodisperse collapsed particle shapes prepared via single-stage swelling and polymerization of 3% DVB crosslinked seeds. (a) 10%, (b) 20%, (c) 30%, and (d) 40% DVB in the swelling monomer.

## Video Captions

Video 1. Confocal microscopy z-scan through the height of a hexagonal monolayer crystal. Particles orient randomly as dimple-up or dimple down.

Video 2. Confocal microscopy z-scan through the height of a 1Sides structure.

Video 3. Confocal microscopy time series scan of the 1Sides structure. The axis of symmetry adopts random orientations (in-plane) characteristic of a hindered rotator or plastic crystal phase.

Video 4. Confocal microscopy time series scan of the buckled 1B\* phase. Particles adopt 'sides' orientation and are positioned on alternating rows in two sublayers with respect to z, separated by a fraction of the cell height. Rows form labyrinth-like structure.

Video 5. Confocal microscopy time series scan of the 2■\* phase.

Video 6. Confocal microscopy time series scan of 2■\* grains viewed as an enlarged section. Particles in the top layer tend to orient dimple-up and in the bottom layer (see interstices) with 'sides' orientation.