Supporting information for

Mutual interaction between the embedded microgel particles and the surrounding hydrogel matrix

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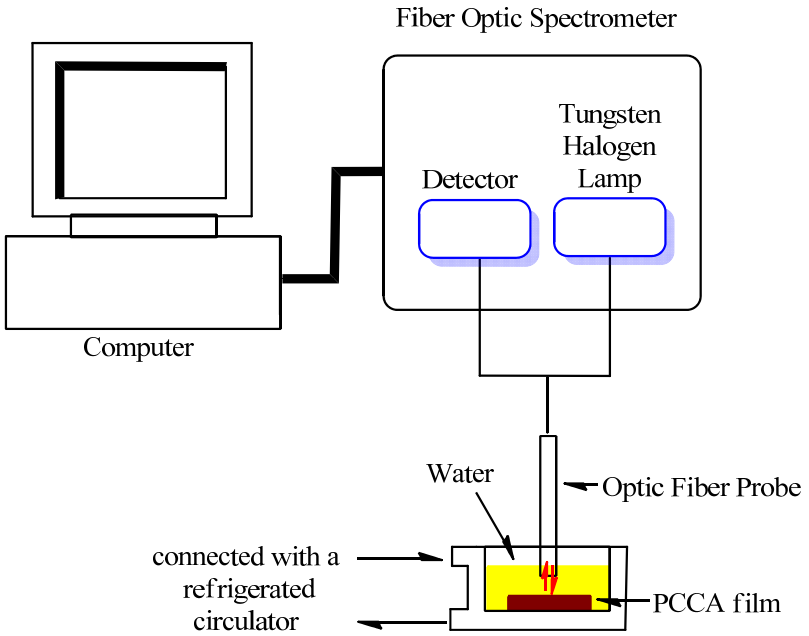

Fig. S1 Experimental setup for the measurement of the reflection spectra of PCCA films.

The crystal structure of the microgel CCAs and PCCAs may be body-centered cubic (bcc) or face-centered cubic (fcc). Fig. S2 shows an fcc unit cell. If an fcc structure forms, the lattice constant a can still be calculated from the Bragg diffraction wavelength, using Eq. 1. In this case, the main diffraction peak is identified as (1,1,1) reflection. The shortest distance between two microgel particles, D_f, is then calculated using the following relationship:

$$D_f = \frac{\sqrt{2}}{2} a$$

As mentioned in the text, the calculated result of D_f is the same with that assuming a bcc lattice.

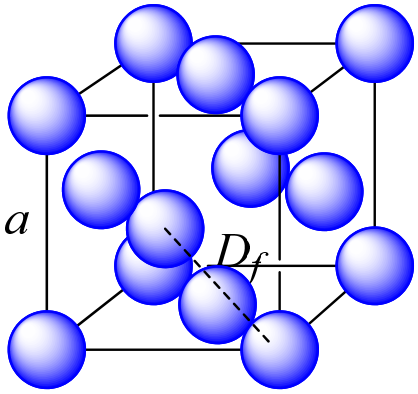

Fig. S2 Face centered cubic (fcc) crystal unit cell.

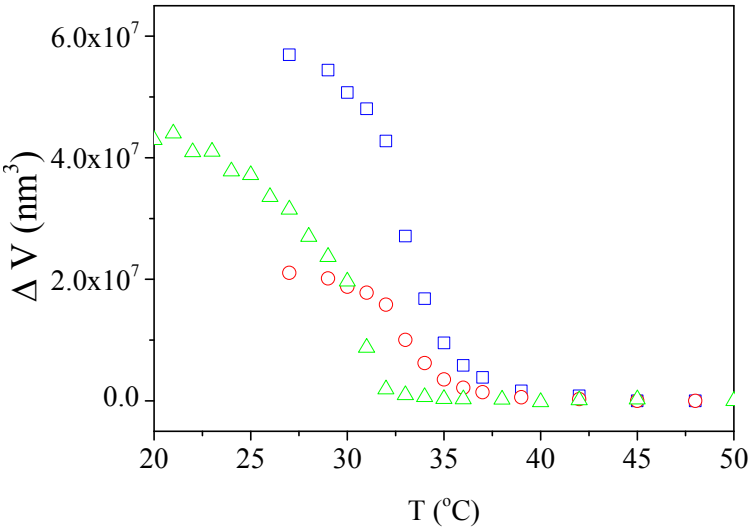

Fig. S3 Re-plot Figure 3E assuming an fcc lattice. Volume change of a unit cell (□) during the cooling process and the corresponding volume change of 4 microgel particles which is calculated from D_f (○) and D_h (△), respectively.