Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

(Electronic Supplementary Information)

Optical Anisotropy in Packed Isotropic Spherical Particles: Indication of Nanometer Scale Anisotropy in Packing Structure

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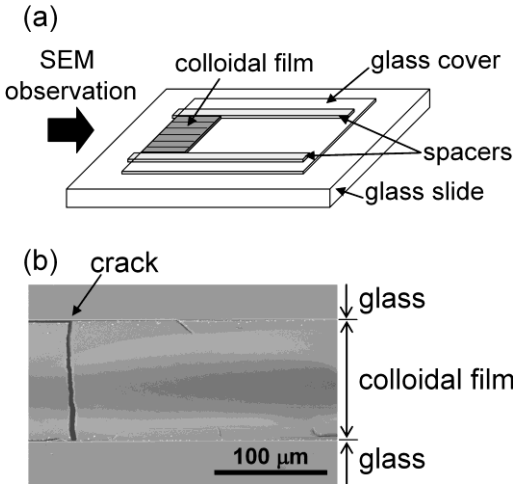

Fig. S1

Schematic illustration of unidirectional drying method using a handmade glass cell (a) and typical example of film thickness observed by a scanning electron microscope (b). The image in (b) was obtained from the direction indicated by the bold arrow in (a). Parallel lines in colloidal film in (a) represent cracks. We used a scanning electron microscope (TM-1000, Hitachi High-Technologies Corporation). In (b), the film thickness was 106 μm, which is close to the thickness of silicon rubber, 100 μm.

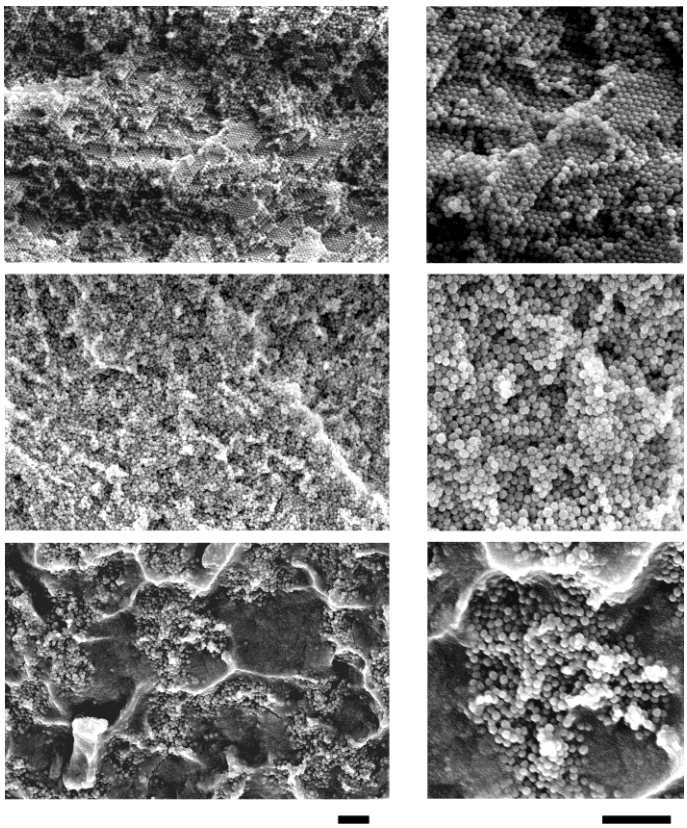

Fig. S2

Cross sectional surface observation of sample films by scanning electron microscopy. (top) colloidal film of silica (diameter 120 nm), (middle) a colloidal film of a mixture of silica (diameter 120 nm) and latex (diameter 140 nm), (bottom) a colloidal film of a mixture of large silica (diameter 120 nm) and small silica (diameter 10 nm). Part of each image on the left was magnified and shown in the right. Scale bars are 1 μm. In the mixed silica film in shown in the bottom, we observed “aggregates” of large particles on the cut surface, indicating that segregation of two particles occurred in the bulk. All samples were cut parallel to the radial direction of the original colloidal films and direction from right to left in the above images corresponds to the radial direction of each sample.