Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Electronic Supplementary Information

Nanostructural control of transparent hydroxyapatite nanoparticle films using a citric acid coordination technique

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Figure S1

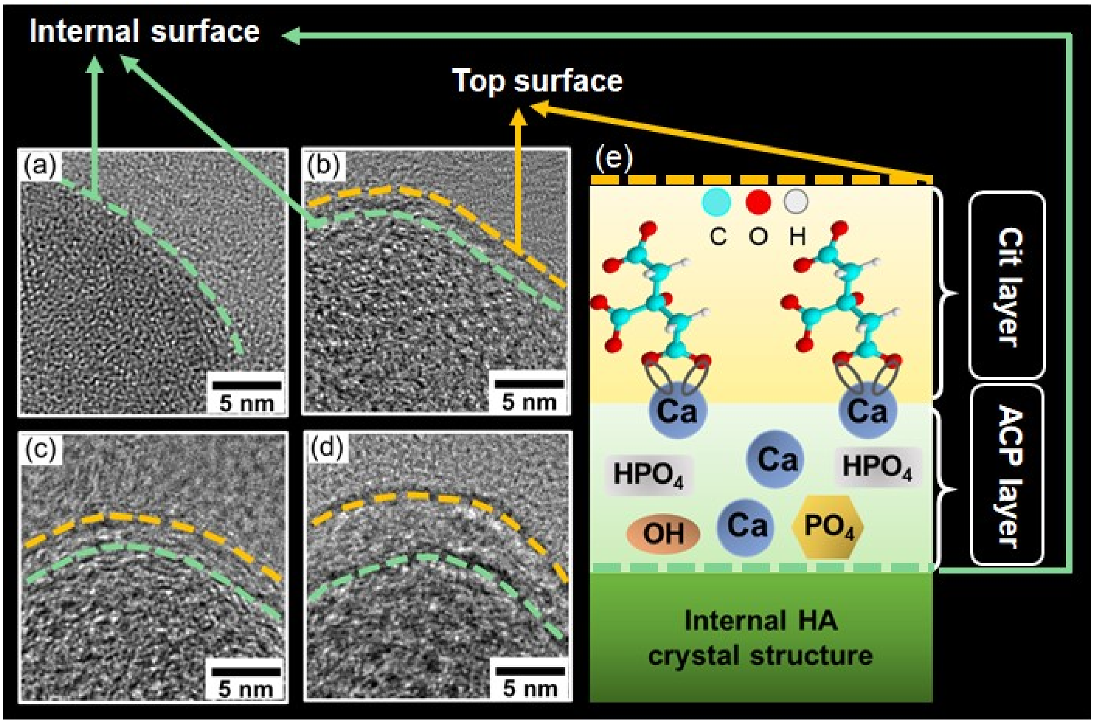


Fig. S1 TEM images of the surface layers between top and internal surfaces of (a) **0**Cit/HA, (b) **1**Cit/HA, (c) **2**Cit/HA and (d) **3**Cit/HA where the average surface layer thicknesses were 0, 1.7, 2.2 and 4.1 nm, respectively. (e) Illustration of the possible surface layer structures of the Cit/HA nanoparticles.

Figure S2

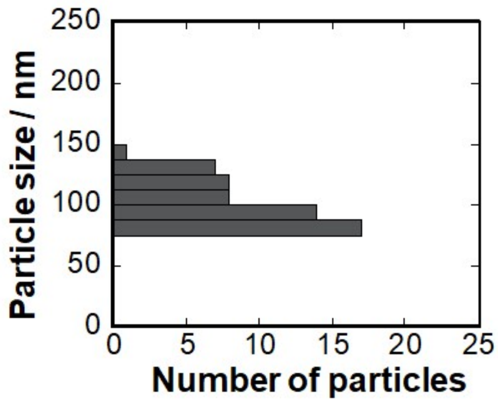


Fig. S2 Particle size distribution of **1**Cit/HA dispersed in PBS.

Figure S3

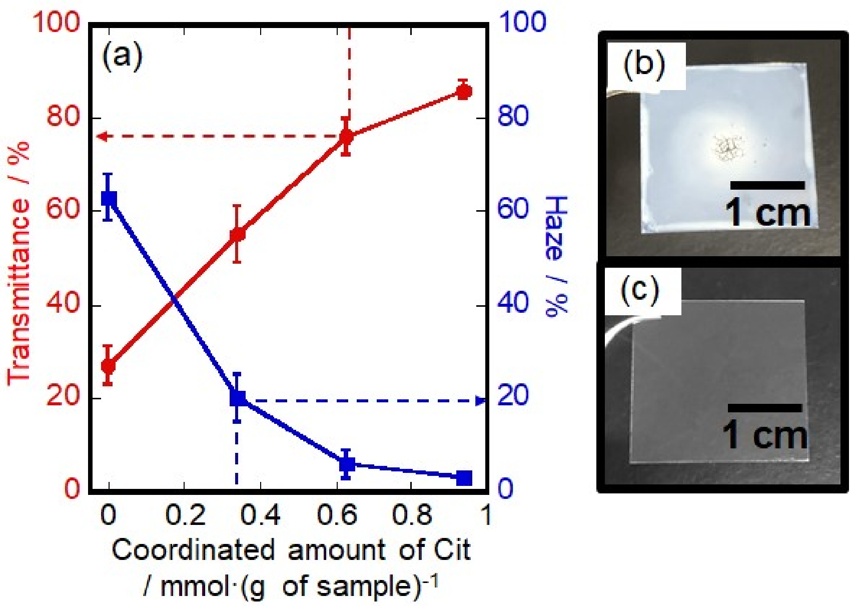


Fig. S3 (a) Transmittance and haze value changes of the cal-Cit/HA-F films with the coordinated amount of Cit, and the photographs of (b) cal-**0**Cit/HA-F and (c) cal-**3**Cit/HA-F.

Figure S4

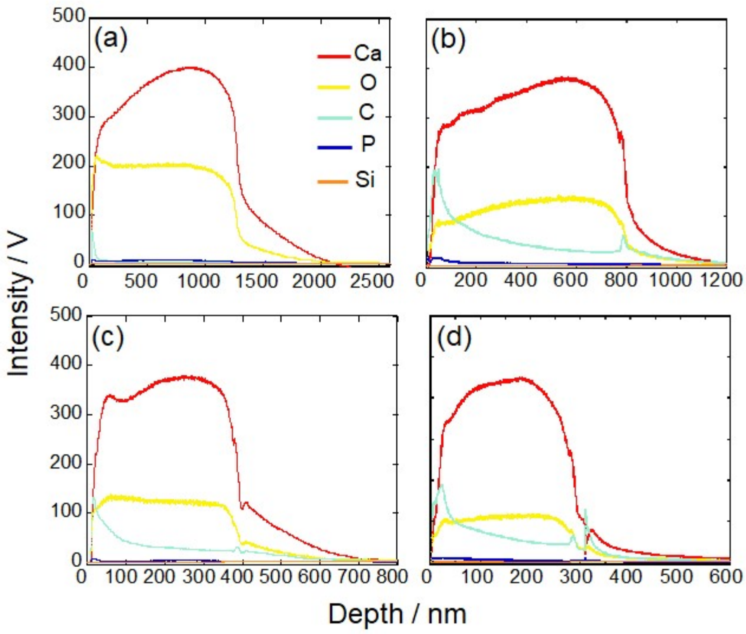


Fig. S4 GD-OES elemental depth profiles of (a) **0**Cit/HA-F, (b) **1**Cit/HA-F, (c) **2**Cit/HA-F and (d) **3**Cit/HA-F.

Figure S5

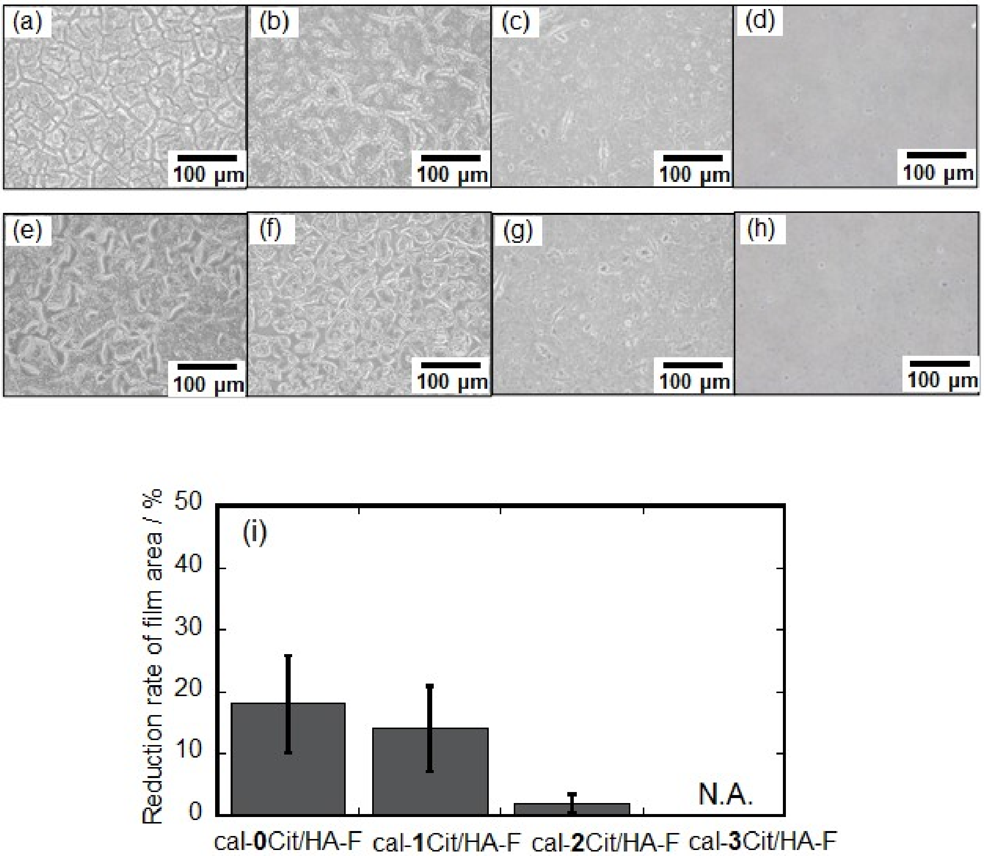


Fig. S5 Microscopic photographs of (a, e) cal-**0**Cit/HA-F, (b, f) cal-**1**Cit/HA-F, (c, g) cal-**2**Cit/HA-F and (d, h) cal-**3**Cit/HA-F before and after the tape peeling test and (i) their reduction rate of the film areas.

Figure S6

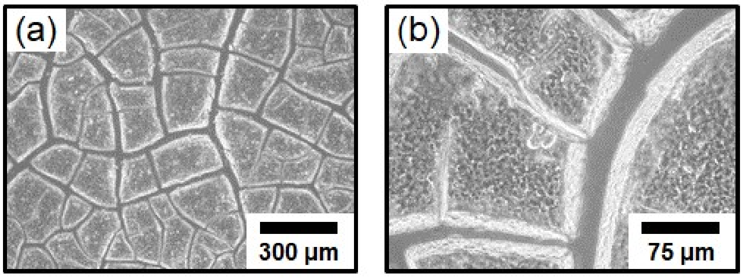
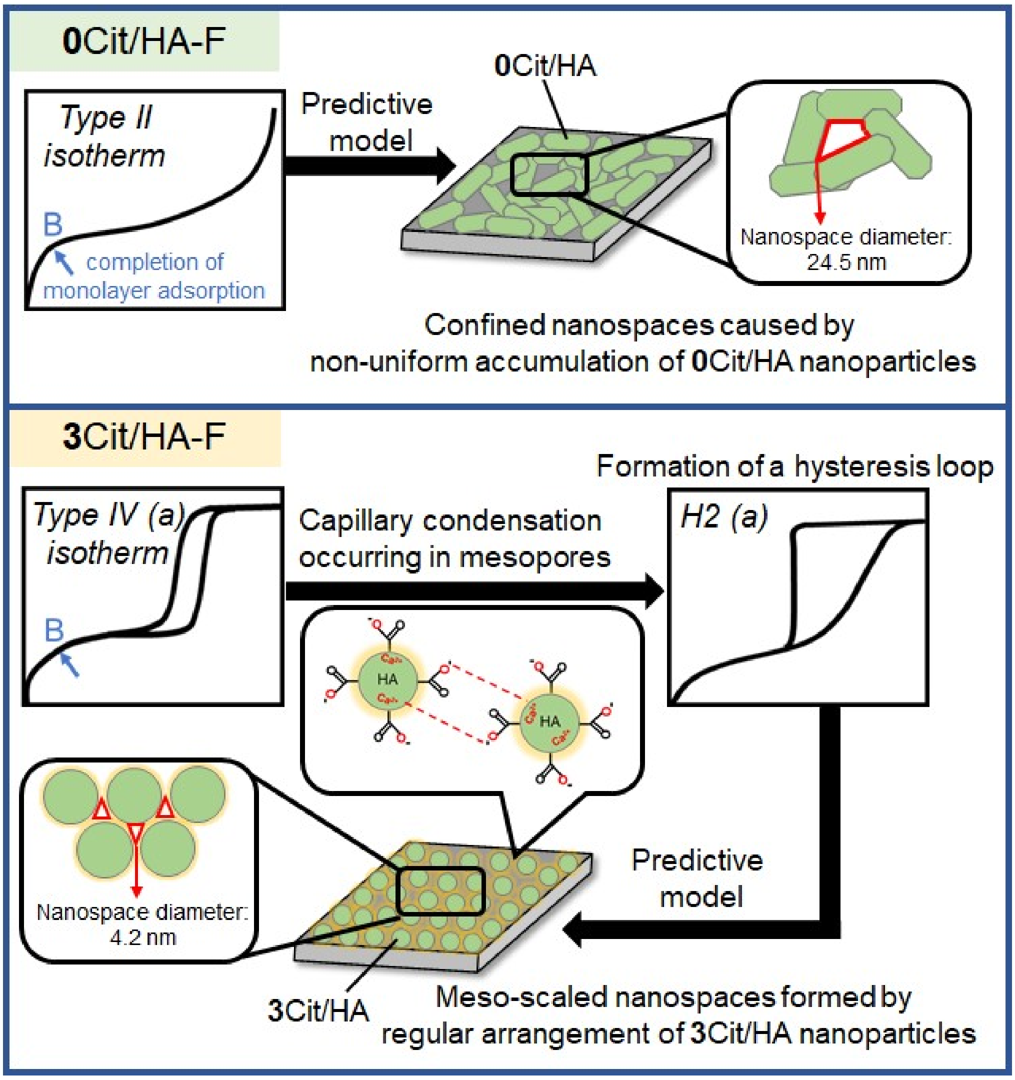


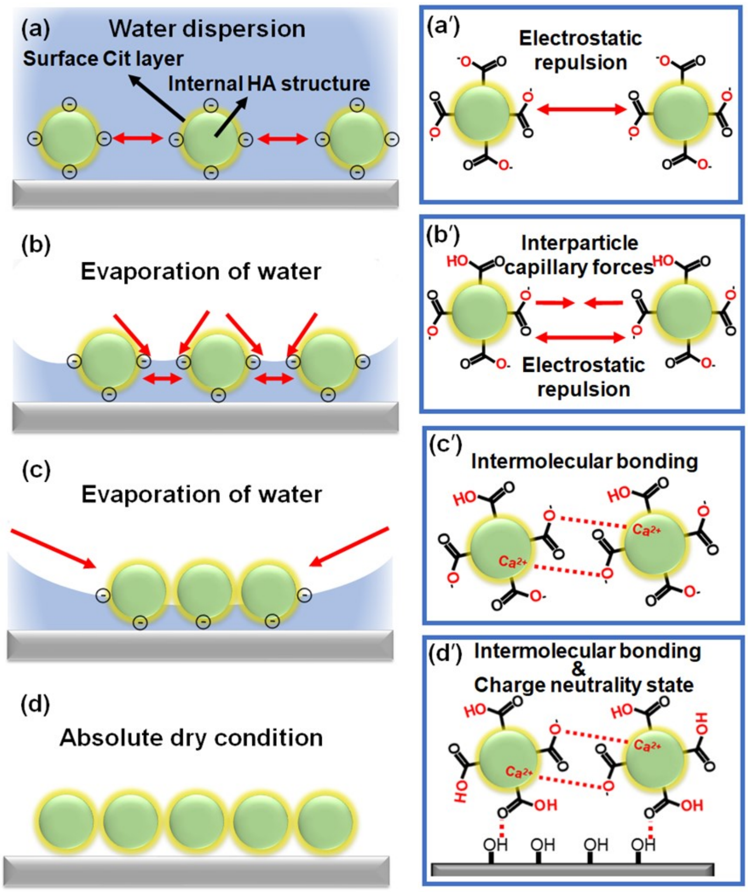
Fig. S6 Optical microscope images of the cell adhesion on **0**Cit/HA-F at the culture time of 3 h ((a) lower and (b) higher magnification).

Scheme S1



Scheme S1 Illustration of the possible nanospace formation in the Cit/HA-F films based on the results in the N_2 adsorption and desorption isotherms.

Scheme S2



Scheme S2. Illustration of the changes in (a−d) arrangement states and (a′−d′) interaction forces between the nanoparticles during the dry process of **3**Cit/HA-F. Here, only the nanoparticles in the bottom layer are discussed for easily understanding.

Figure S7

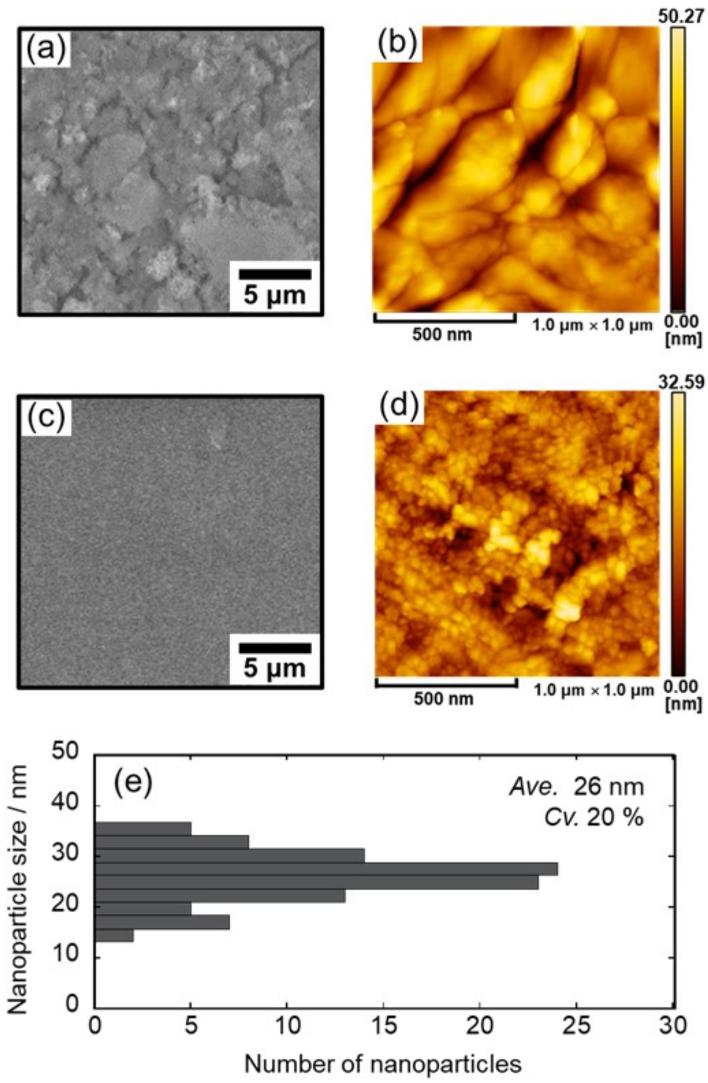


Fig. S7. SEM and AFM surface topographic images of (a, b) cal-**0**Cit/HA-F and (c, d) cal-**3**Cit/HA-F, and the RMS values of cal-**0**Cit/HA-F and cal-**3**Cit/HA-F were 7.69 nm and 4.59 nm, respectively. (e) Nanoparticle size distribution in the cal-**3**Cit/HA-F.