Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary Information

Efficient and Stable Electrorheological Fluids Based on Chestnut-like Cobalt Hydroxide Coupled with Surface-functionalized Carbon Dots

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Figure. S1. EDS overlap (a and b) and element mapping profiles (c-f) of the $Co(OH)_2$@CDs-100 sample.

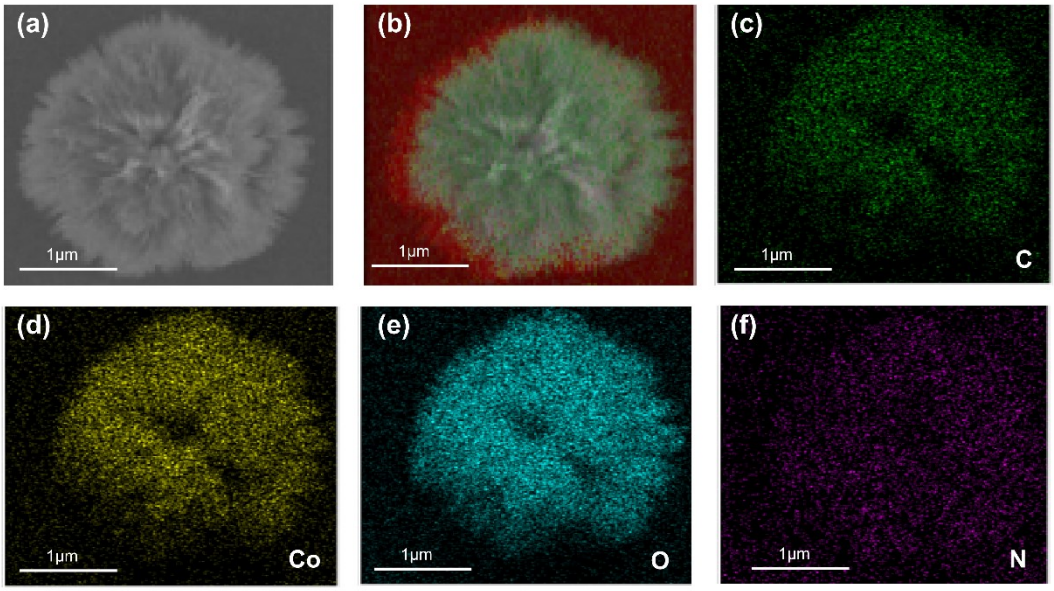

Figure. S2. SEM images of (a, b, c) $Co(OH)_2$@CDs-20, (d, e, f) $Co(OH)_2$@CDs-50 and (g, h, i) $Co(OH)^2$@CDs-100 under different magnifications.

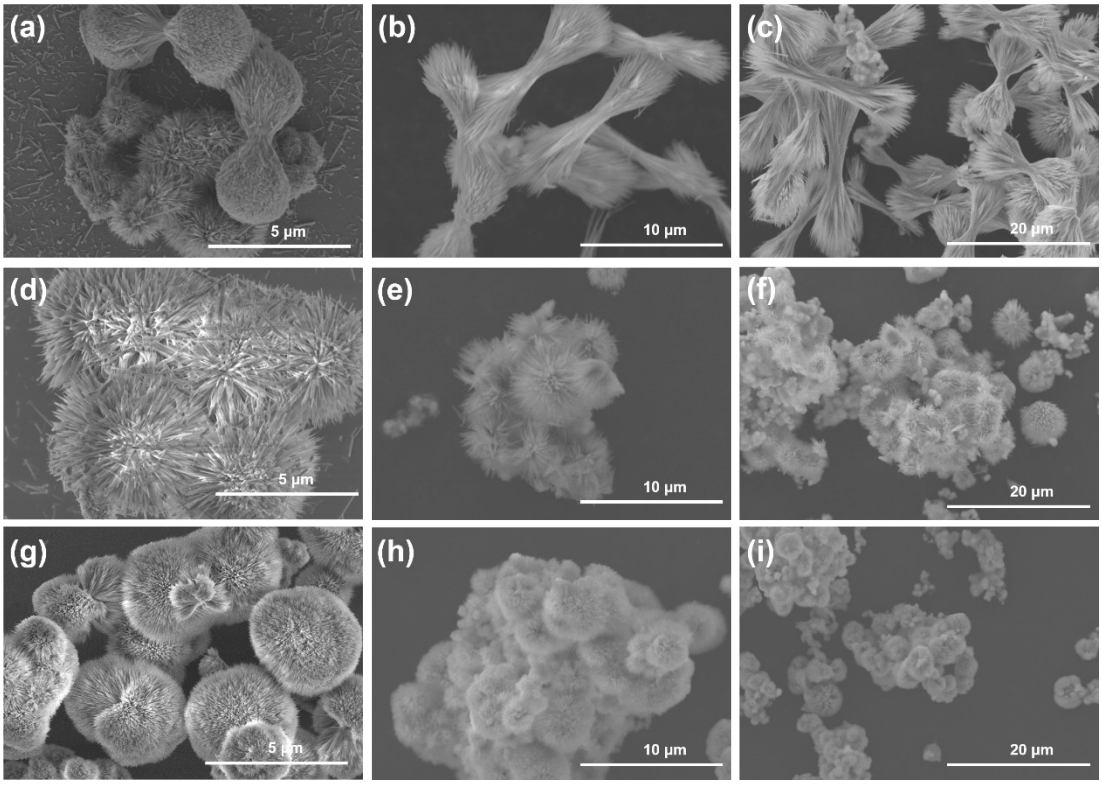

Figure. S3. SEM images of $Co(OH)_2$@CDs-100 particles prepared at 80°C (a), 100°C (b), 150°C (c), 200°C (d) hydrothermal synthesis temperature.

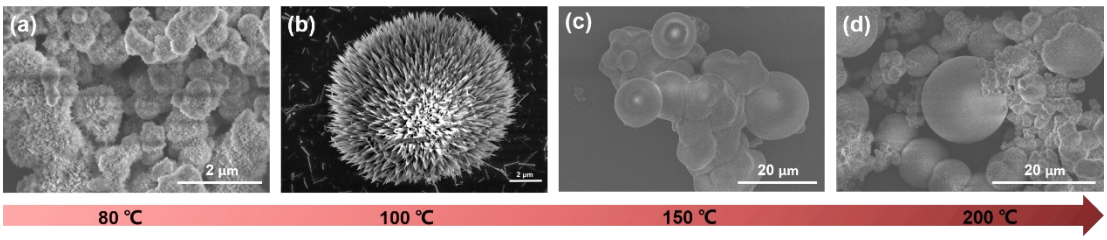

Figure. S4. (a) XRD patterns and (b) FTIR spectra of $Co(OH)_2$@CDs-x (x= 20, 50, and 100).

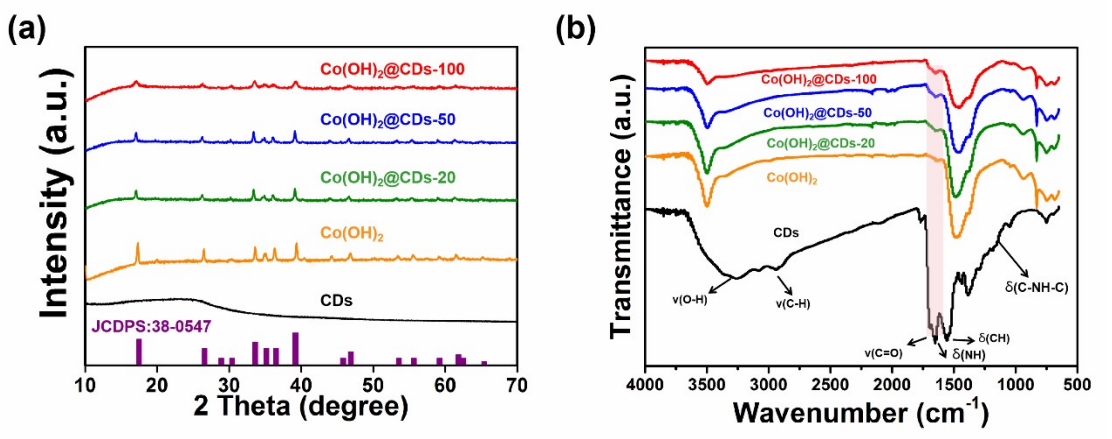

Figure. S5. Optical microscopy images of $Co(OH)_2$@CDs-100-ERF with particle mass fractions of 2% (a) without and (b) with the application of an E (1 kV/mm).

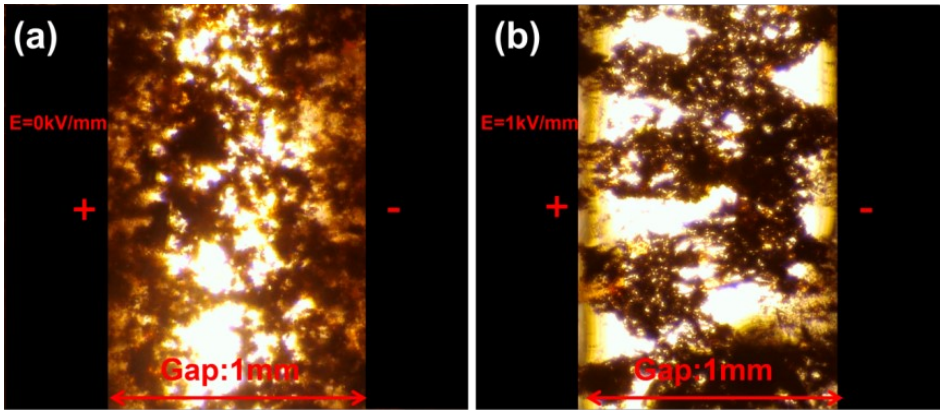

Figure. S6. The shear stress versus time curve of $Co(OH)_2$@CDs-100-ERF with particle mass fractions of 20wt% at a shear rate of 0.1 s^{-1}.

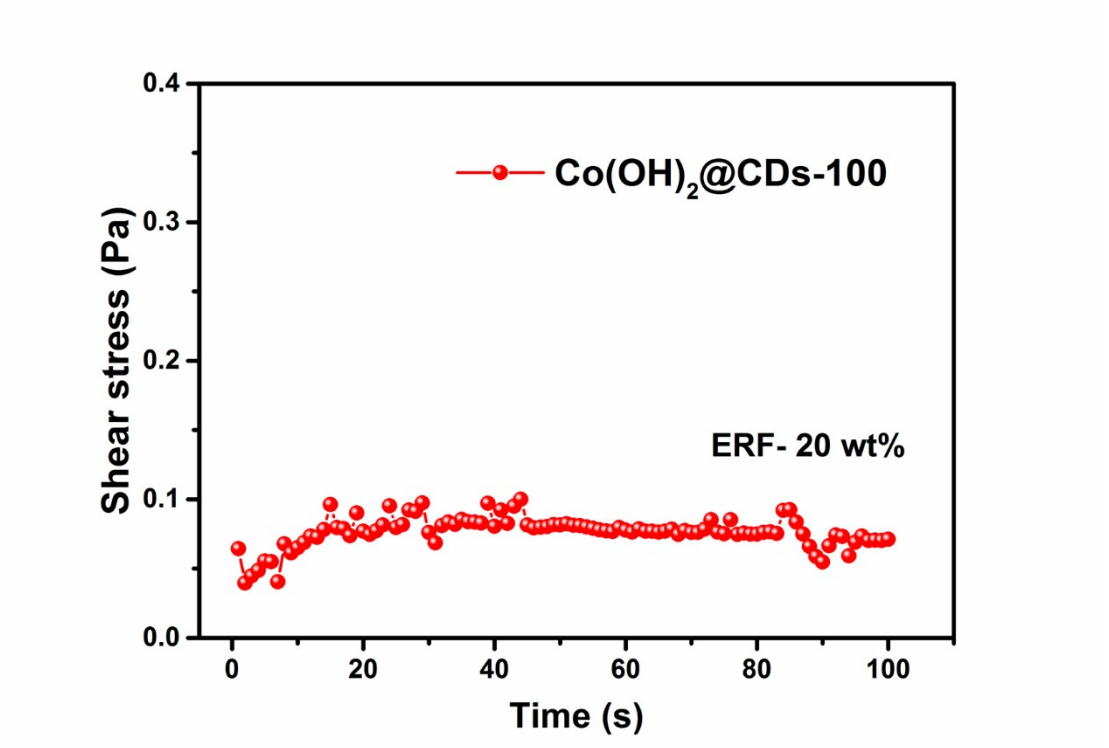

Figure. S7. Permittivity (ε') and loss factor (ε'') as a function of electric field frequency for $Co(OH)_2$@CDs-100 (a), 50 (b), 20 (c), 0 (a)-ERFs with a particle mass fraction of 20%.

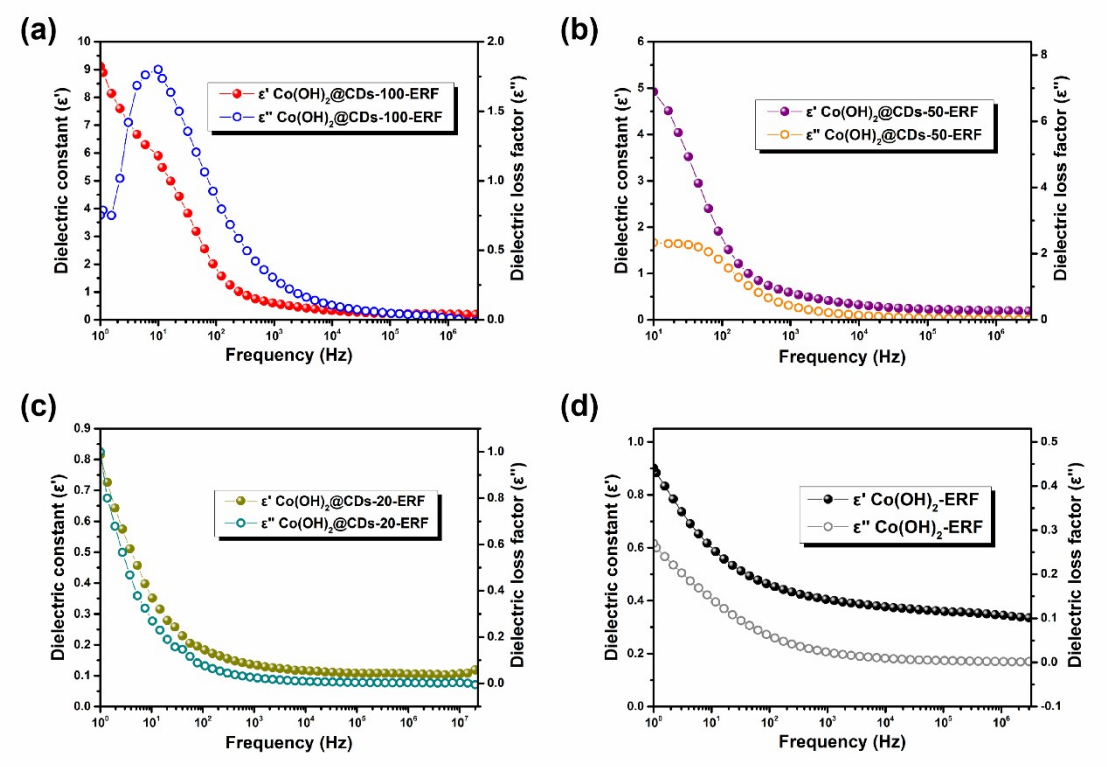

Figure. S8. SEM image of the aligned chains of $Co(OH)_2$@CDs-100 particles under different magnifications.