Supplemental Information

Fig. S1 The fluorescence spectra of 5 wt% CDs (Emission wavelength shifted from 250 nm to 600 nm when the excitation wavelength escalated 390 nm, 420 nm and 430 nm).

Fig. S2 The FT-IR spectra of PEG, CS and CS/PEG.
Fig. S3 Average friction coefficient of CDs/PEG/CS sol under different load.

Fig. S4 The average friction coefficient of sol and gel on different surfaces.
**Fig. S5** The fluorescence spectra of release solution from the CDs/PEG/CS gel (Emission wavelength shifted from 250 nm to 600 nm when the excitation wavelength escalated 390 nm, 420 nm and 430 nm).

**Fig. S6** The surfaces of UHMWPE ball.
Fig. S7 The average friction coefficient of different PEG concentration.