Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

A generation of carbon dots/ammonium persulfate redox initiator couple for free radical frontal polymerization

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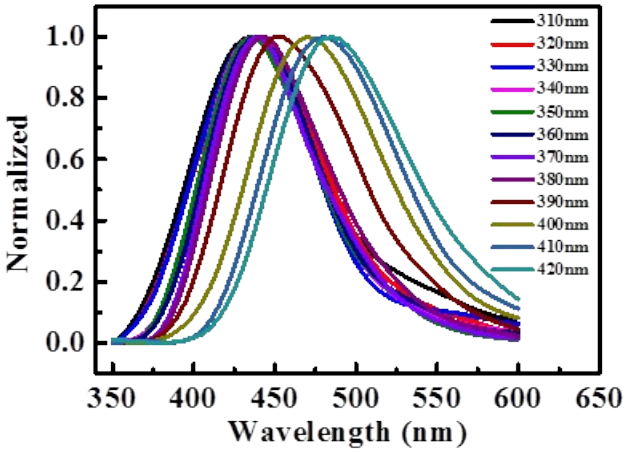

Figure S1. PL emission spectra of the CDs in aqueous solution with the excitation wavelength.

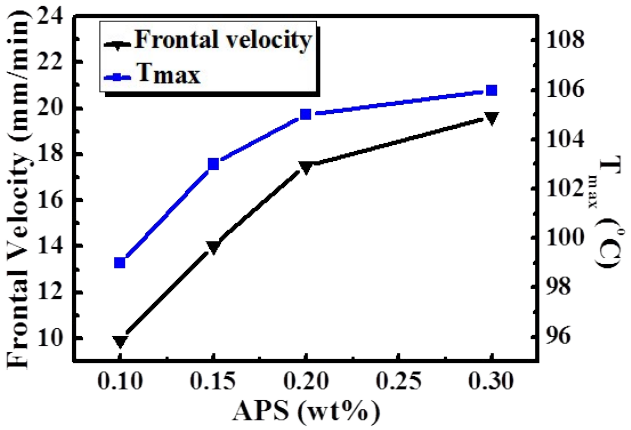

Figure S2. The frontal velocity and T_{max} as a function of APS concentration for hydrogels at HEA/NVP = 8:2 wt/wt, glycerol = 50 wt%, MBAA = 0.25 wt%.

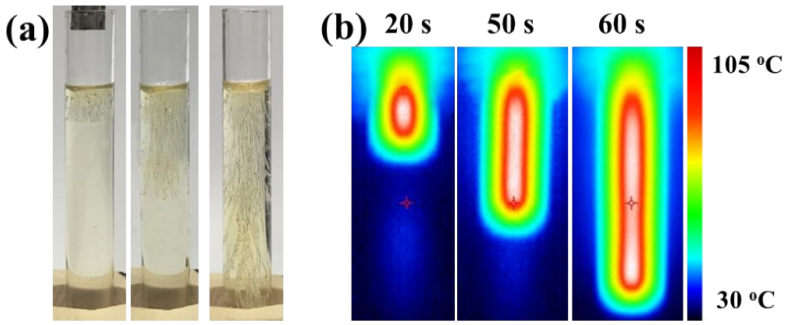

Figure S3. (a) Typical visual images and (b) sequence of thermos IR images of the polymerization process of the polymer gel at the CDs concentration of 0.15 wt%.

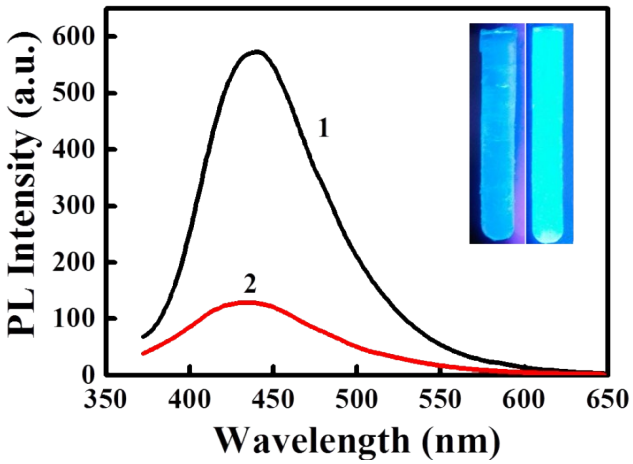

Figure S4. PL emission spectra (360 nm excitation) of (1) poly(HEA-*co*-NVP)/CDs hydrogel with the 0.1 wt% CDs and (2) poly(HEA-*co*-NVP) hydrogel at HEA/NVP = 8:2 wt/wt, glycerol = 50 wt%, MBAA = 0.25 wt%, APS = 0.2 wt%. (Insets: digital photographs of the corresponding hydrogels with (right) and without (left) the CDs under UV light.)

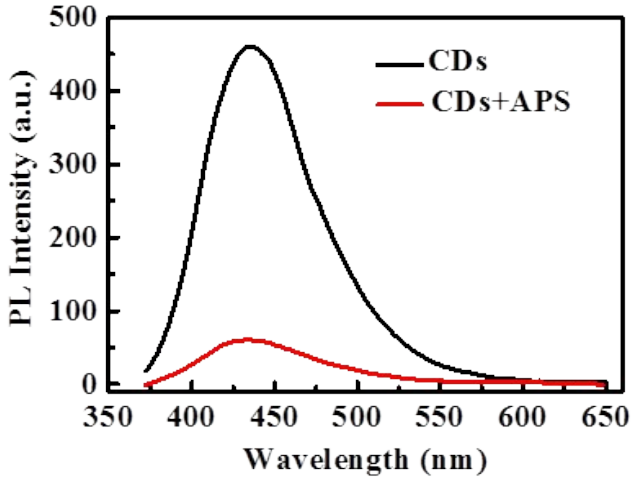

Figure S5. PL emission spectra (360 nm excitation) of the CDs in aqueous solution without and with APS.

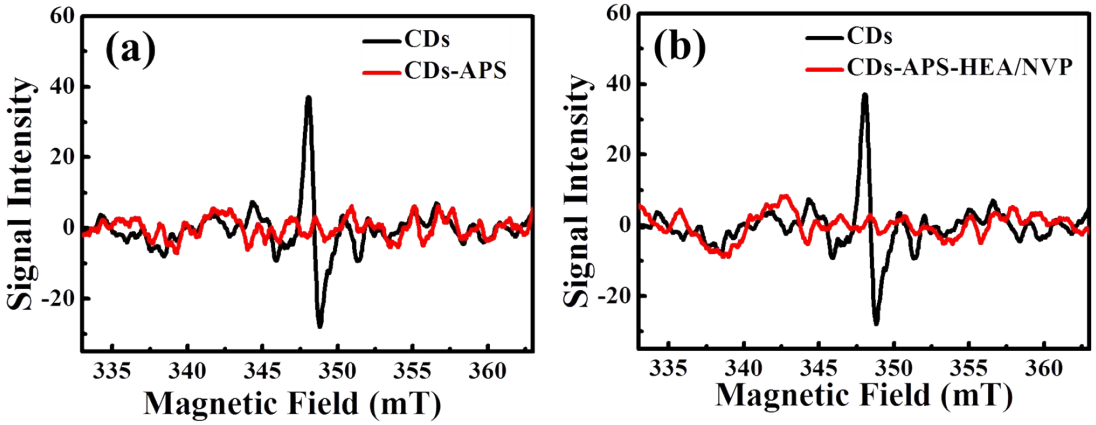

Figure S6. EPR spectra of the aqueous solutions of (a) the CDs with or without APS, and (b) the CDs with or without APS and monomers under visible light after heating for 1 h.

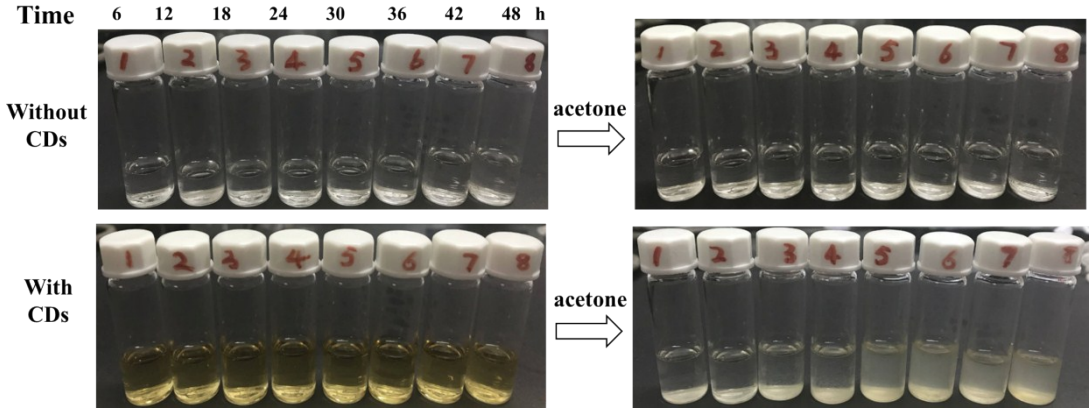

Figure S7. Photographs of the products for the solution polymerization with or without CDs at 80 °C and the corresponding precipitation solution used acetone as the precipitant.(HEA/NVP = 4:1 wt/wt, H_2O = 80 wt%)

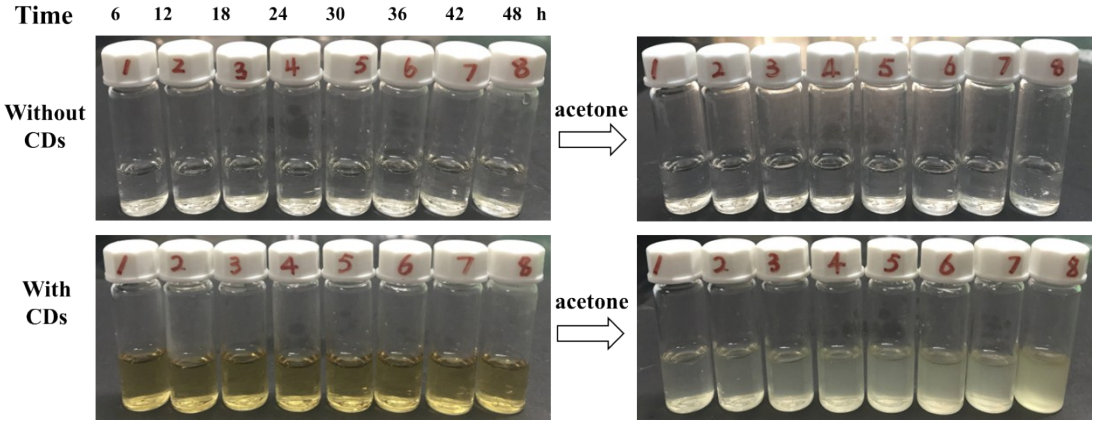

Figure S8. Photographs of the products for the solution polymerization with or without CDs at 90 °C and the corresponding precipitation solution used acetone as the precipitant.(HEA/NVP = 4:1 wt/wt, H_2O = 80 wt%)

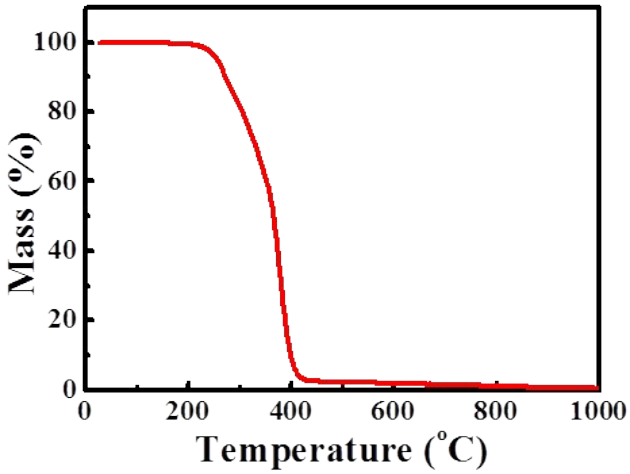

Figure S9. TGA curve of the products initiated by the CDs. (HEA/NVP = 4:1 wt/wt, H_2O = 80 wt%)

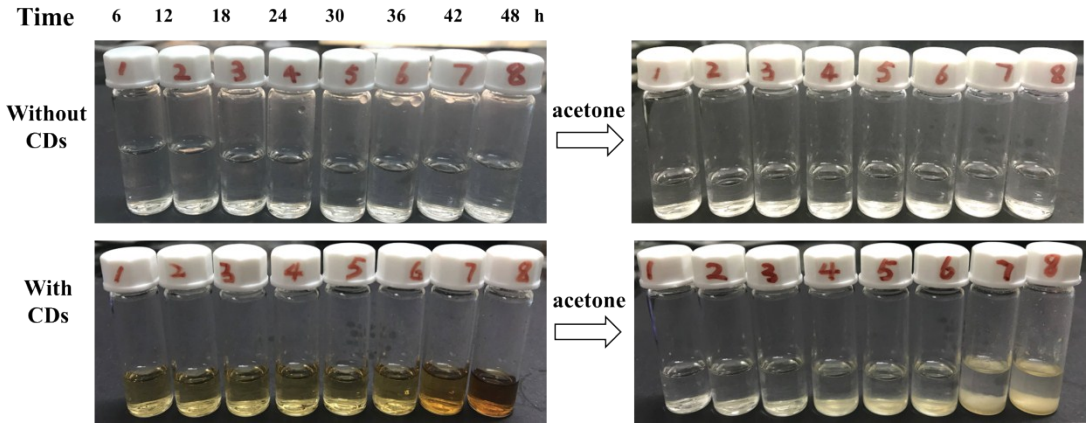

Figure S10. Photographs of the products for the solution polymerization with or without at 90 °C and the corresponding precipitation solution used acetone as the precipitant CDs. (AA: DMC = 2:1 wt/wt, H_2O = 80 wt%)

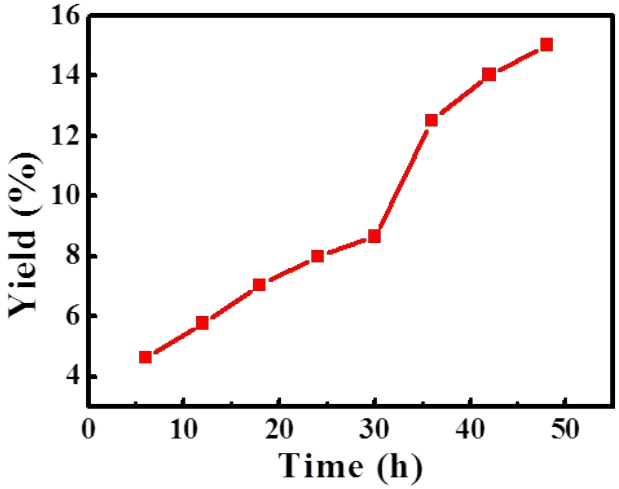

Figure S11. (a) Yields of polymers initiated by the CDs alone as a function of times with different reaction temperatures at HEA/NVP = 4:1 wt/wt, H_2O = 80 wt%.

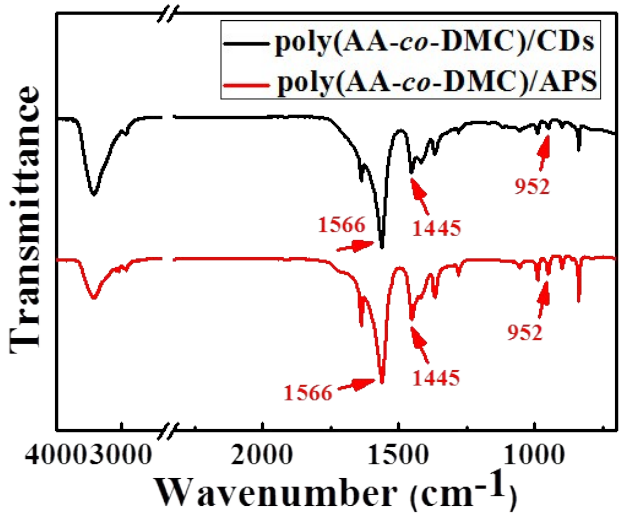

Figure S12. FT-IR spectra of copolymers of HEA and NVP initiated by the CDs or APS.(AA: DMC = 2:1 wt/wt, H_2O = 80 wt%)

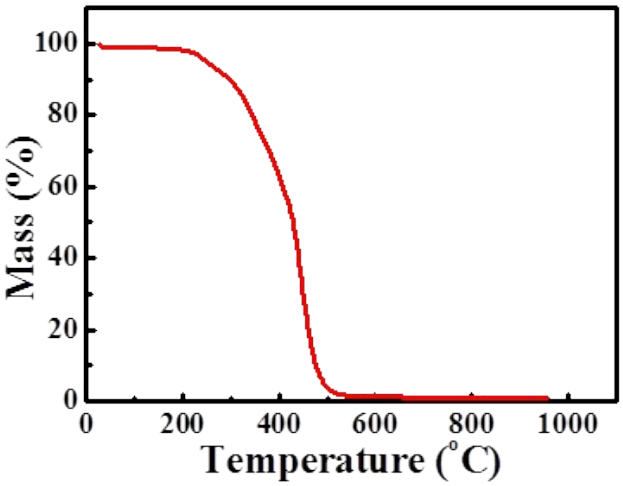

Figure S13. TGA curve of the products initiated by the CDs. (AA: DMC = 2:1 wt/wt, H_2O = 80 wt%)