Supporting Information

Tunable light-emitting carbon-dot/polymer flexible films prepared through one-pot synthesis

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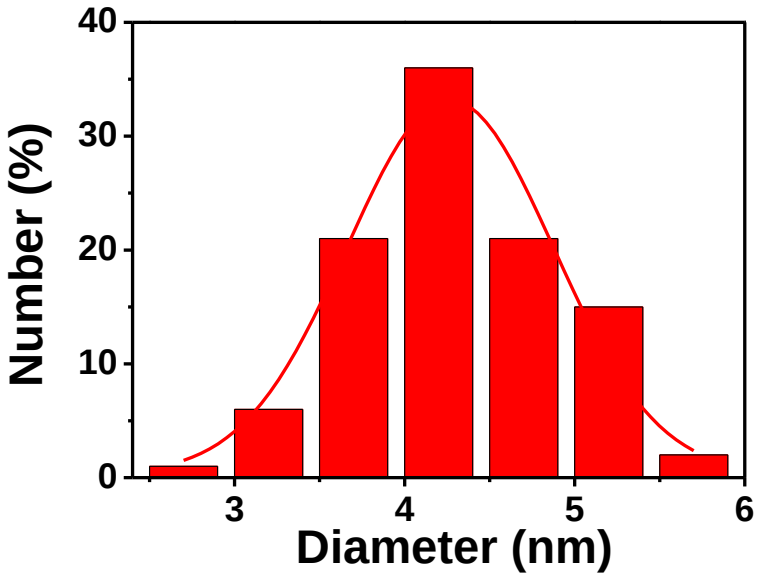

Figure S1: Size distribution of green C-dots extracted from the TEM experiment. Average size of 4.2 ± 0.6 nm.

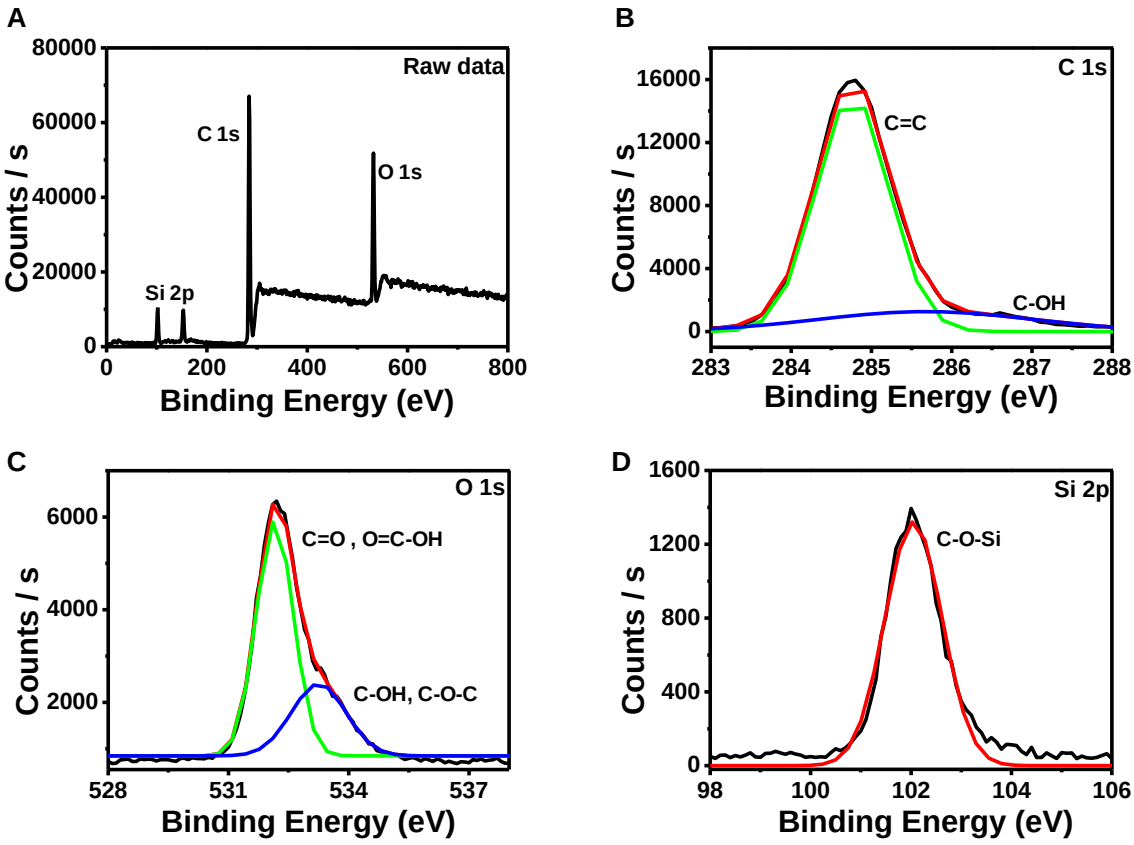

Figure S2: X-ray photoelectron spectroscopy (XPS) of C-dots/PDMS. (A) XPS raw data of yellow C-dots embedded in PDMS matrix showing the signature peaks of carbon and oxygen as well as silicon from the PDMS matrix. (B) Deconvoluted C 1s spectrum, displaying a peak at ~ 284.7 eV corresponding to sp^2 carbon atoms (C=C) and a peak at ~ 286.0 eV assigned to C–OH groups. (C) Deconvoluted O 1s spectrum displaying a peak at ~ 532.0 eV for C=O and O=C-OH groups, and a peak at ~ 533.2 eV for C-OH and/or C-O-C groups. (D) The peak at ~ 102.0 eV of Si 2p represents the C-O-Si units of the PDMS matrix. XPS experiments were performed on an X-ray photoelectron spectrometer ESCALAB 250 ultrahigh vacuum ($1*10^{-9}$ bar) apparatus with an AlK^{α} X-ray source and a monochromator. The X-ray beam size was 500 µm and survey spectra was recorded with pass energy (PE) 150eV and high energy resolution spectra were recorded with pass energy (PE) 20eV. Processing of the XPS results was carried out using AVANTGE program.

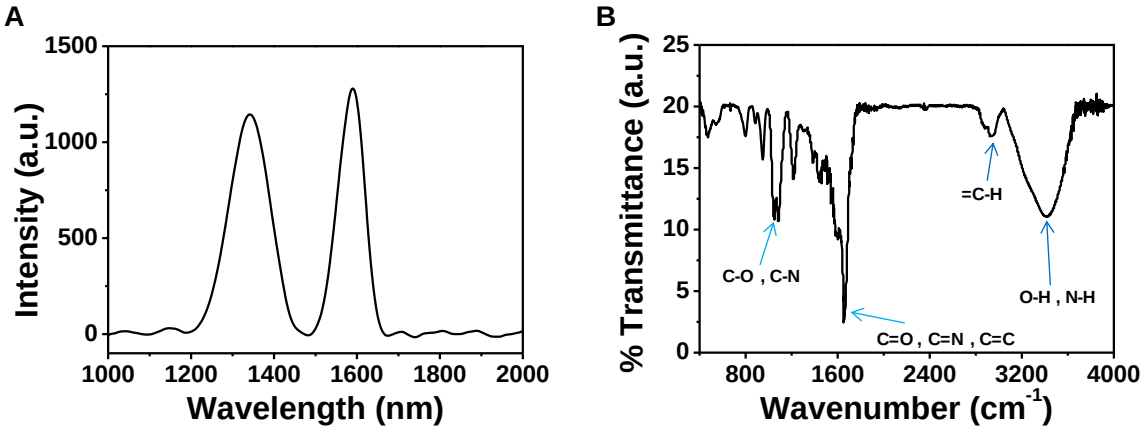

Figure S3: Spectroscopic characterization of C-dot/PDMS films. (A) Raman spectrum showing the D and G bands at ~1340 and ~1590 cm^{-1}, respectively, with I_G/I_D ratio of ~1.12, indicating the presence of more graphitic carbon than defect states. Raman spectrum was recorded with a Jobin-Yvon LabRam HR 800 micro-Raman system equipped with a Synapse CCD detector by 488 nm Argon laser excitation source. (B) Fourier transform infrared (FTIR) spectrum of orange C-dot/PDMS films (precursor 3) showing different functional groups. The peak at ~3400 cm^{-1} corresponds to N-H/O-H stretching, the peak at ~2925 cm^{-1} is ascribed to =C-H (methylene), peak at ~1650 cm^{-1} for C=O, C=N and C=C bonds. The

peak at ~ 1045 cm^{-1} corresponds to the C-O, C-N bonds. FTIR spectroscopy was performed on a NICOLET 6700 FTIR spectrometer.

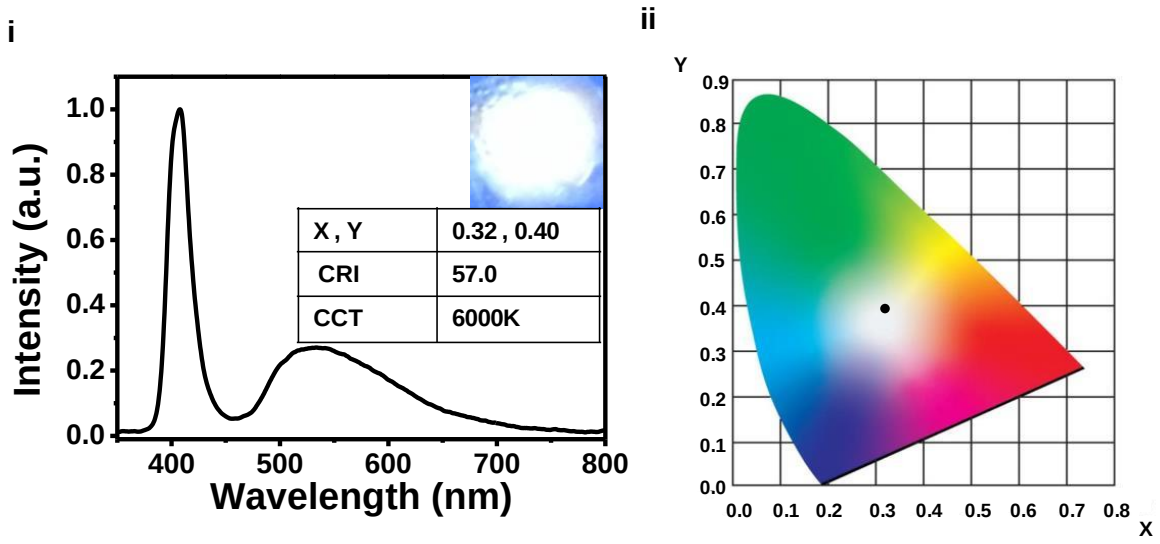

Figure S4: Cool white light generated in C-dot/PDMS film. (i) Emission spectrum of C-dot/PDMS film (prepared by using precursor 1) recorded upon excitation with a blue-LED (403 nm). (ii) CIE diagram showing the coordinated corresponding to the blue LED-illuminated C-dot/PDMS film.