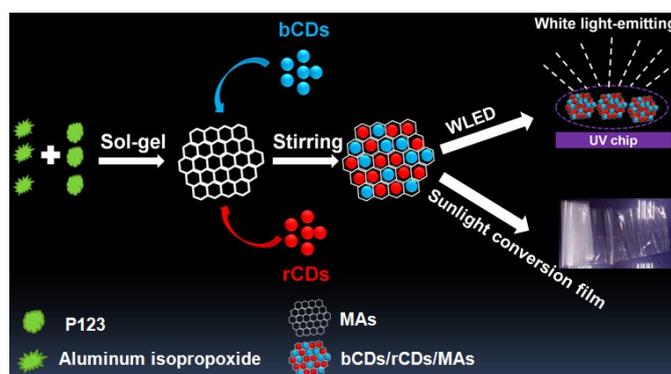


Double carbon dots assembled mesoporous aluminas: solid-state dual-emission photoluminescence and multifunctional applications

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Scheme S1. Preparation processes of the bCDs/rCDs/MAs hybrid materials and multifunctional applications in WLED and transparent sunlight conversion film.

Table S1. Textural data of the MAs, the bCDs/MAs and the bCDs/rCDs/MAs co-

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assembled materials.

Sample	BET Surface Area (m ² /g)	Pore Volume (cm ³ /g)	Pore Size (nm)
MAs	408.87	0.31	3.2
bCDs//MAs	351.98	0.29	3.5
bCDs/rCDs/MAs	205.36	0.25	5.2

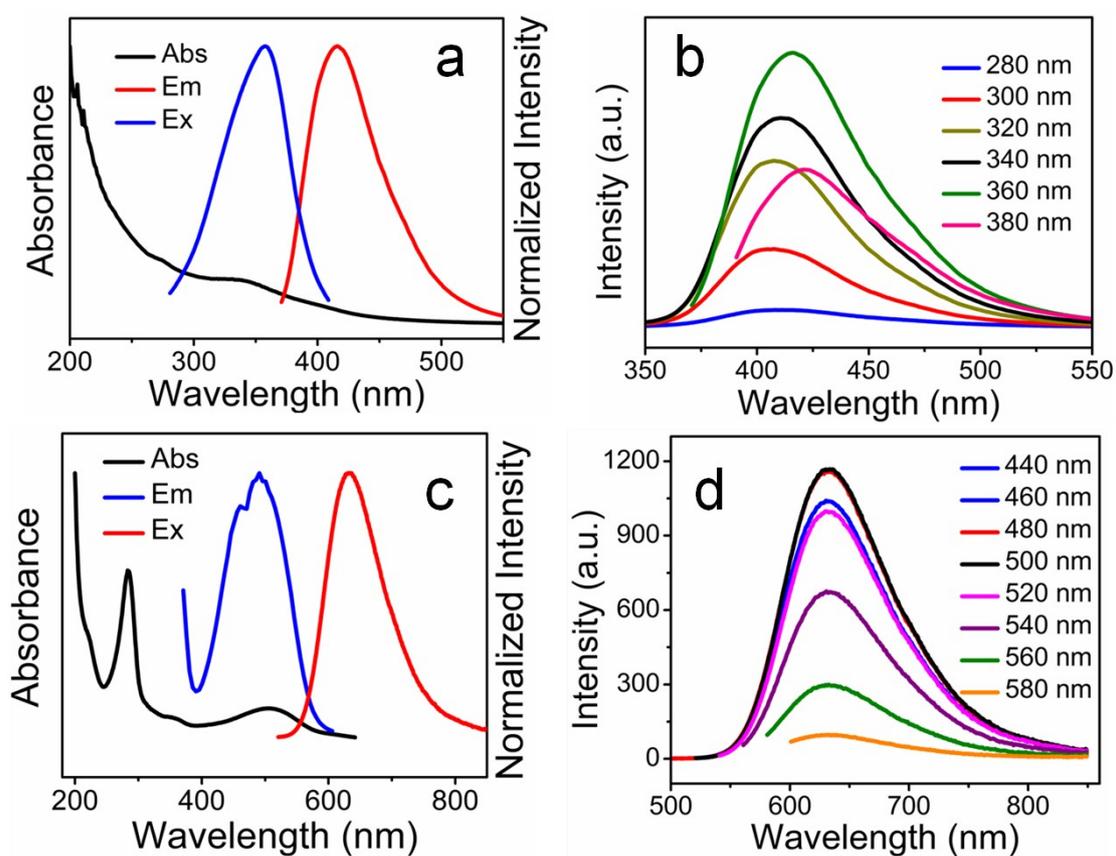


Figure S2. UV-vis absorption (black line), normalized PL excitation (Ex) ($\lambda_{425} = 360$ nm, blue line), and emission (Em) ($\lambda_{500} = 635$ nm, red line) spectra of a) bCDs and c) rCDs, respectively. PL emission spectra with different excitation wavelengths of b) bCDs and d), respectively.

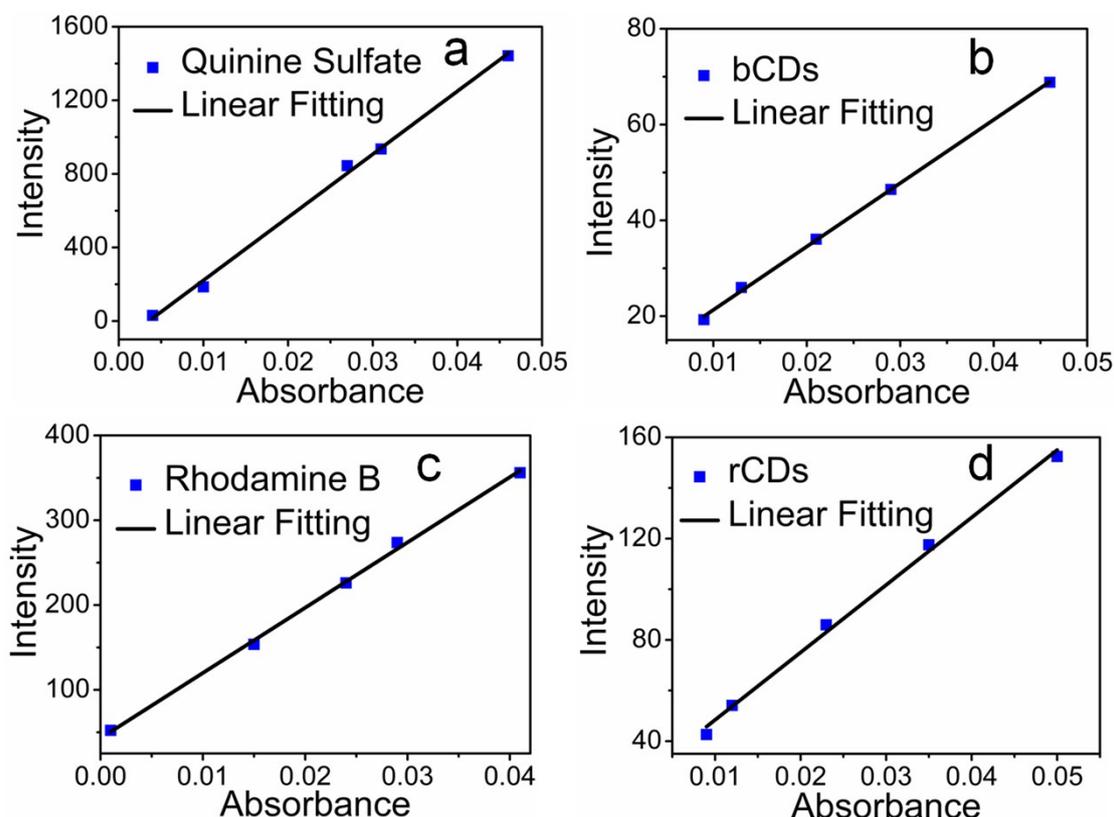


Figure S3. a) Plots of integrated PL intensity of quinine sulfate (referenced dye) in 0.1 mol/L H_2SO_4 and b) bCDs in deionized water as a function of optical absorbance at 340 nm. c) Plots of integrated PL intensity of RCDs and d) rhodamine B (referenced dye) in deionized water as a function of optical absorbance at 500 nm.

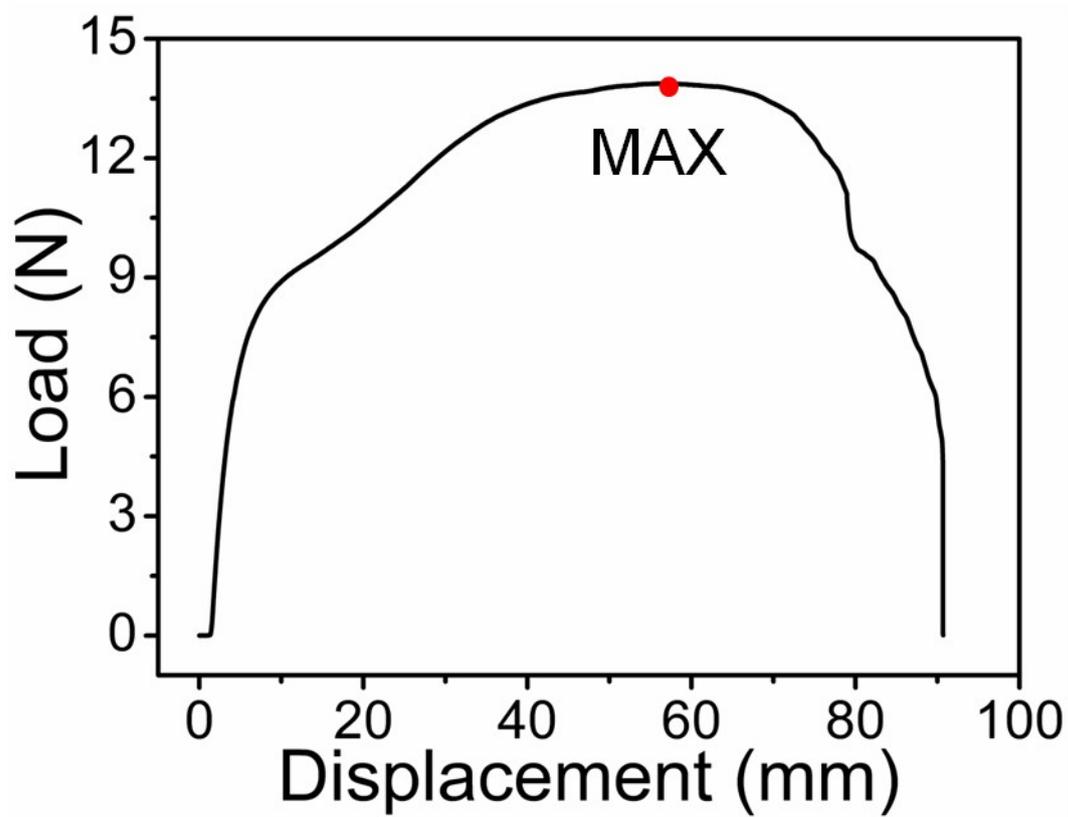


Figure S4. Stretching coefficient diagram of bCDs/rCDs/MAs light conversion film, inset of f): photograph of light conversion film .