

Supporting Information

Fluorescent Carbon Dots from Birch Leaves for Sustainable Electroluminescent Devices

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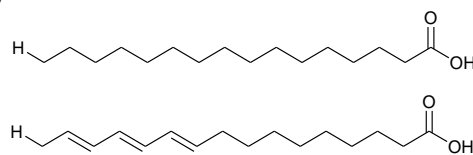
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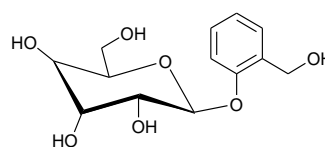
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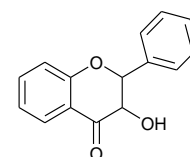
Fatty acids:



Glycoside:



Flavonoids:



Phenolic acid:

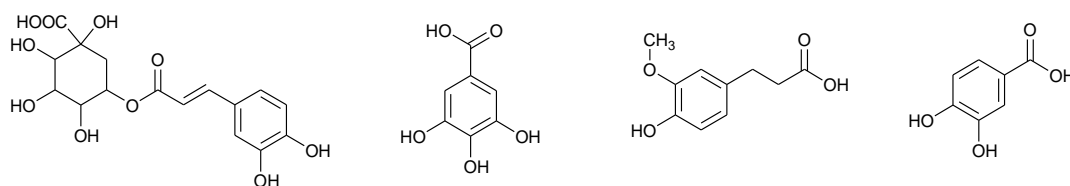


Figure S1. A selection of the biomolecular species commonly present in birch leaves and their chemical structures. The chemical structures of pheophytin a and chlorophyll a are depicted in the lower right-hand part of Figures 1(e) and 1(f), respectively.

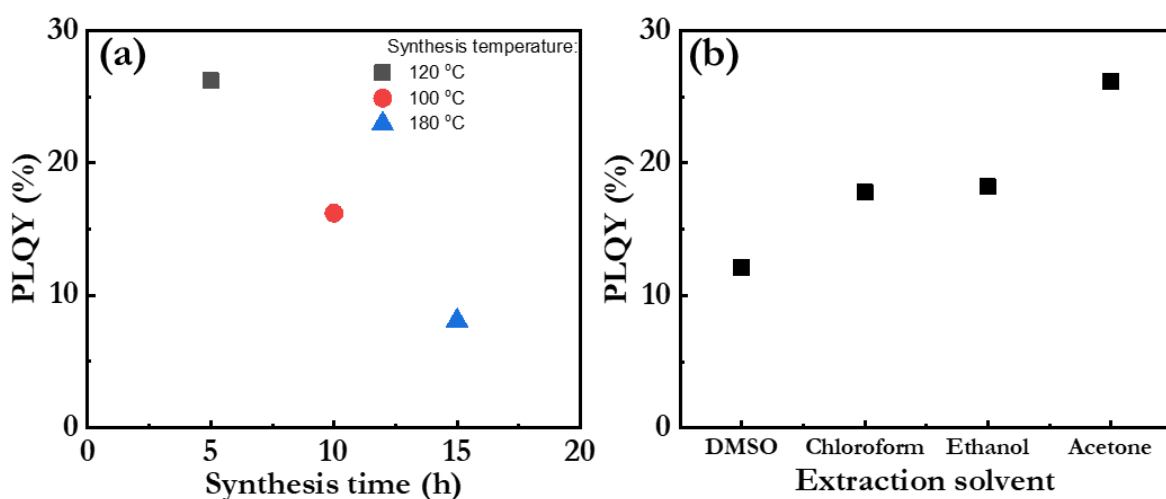


Figure S2. The photoluminescence quantum yield (PLQY) of the synthesized bio-CDs: (a) as a function of the reaction time (see x -axis) and the reaction temperature (see inset) in acetone; (b) as a function of extraction solvents when other reaction parameters remain unchanged (i.e., 120 °C for 5 h).

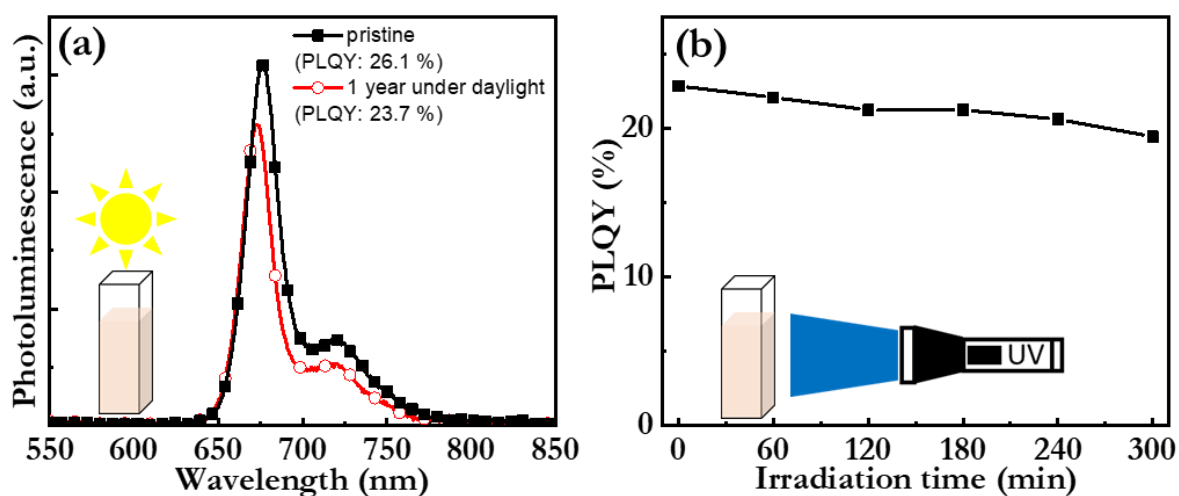


Figure S3. The photostability of the bio-CD-in-ethanol solution (solute concentration = 1.6 mg/L) under ambient air, during exposure to (a) daylight and (b) UV irradiation with a power density of 230 W/m² and a peak wavelength of 365 nm.

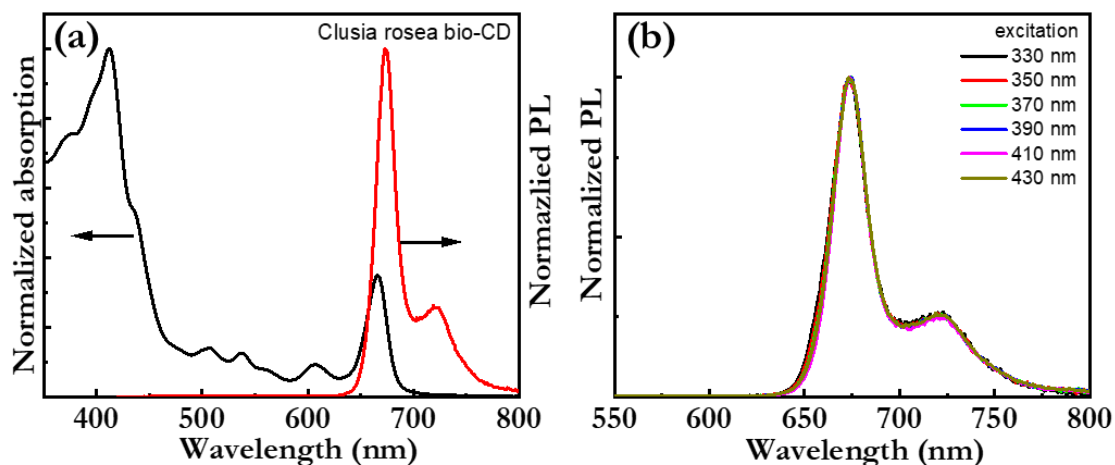


Figure S4. (a) The absorption and PL spectra, and (b) the PL spectrum as a function of excitation wavelength, for bio-CDs synthesized from leaves from the plant “Clusia rosea”.

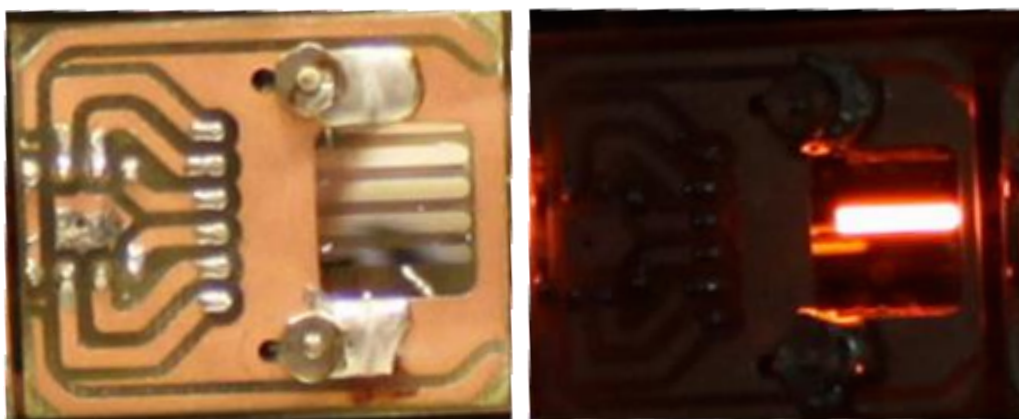


Figure S5. Photographs of an LEC device in the idle off state (left) and during deep-red and narrow-band light emission (right).

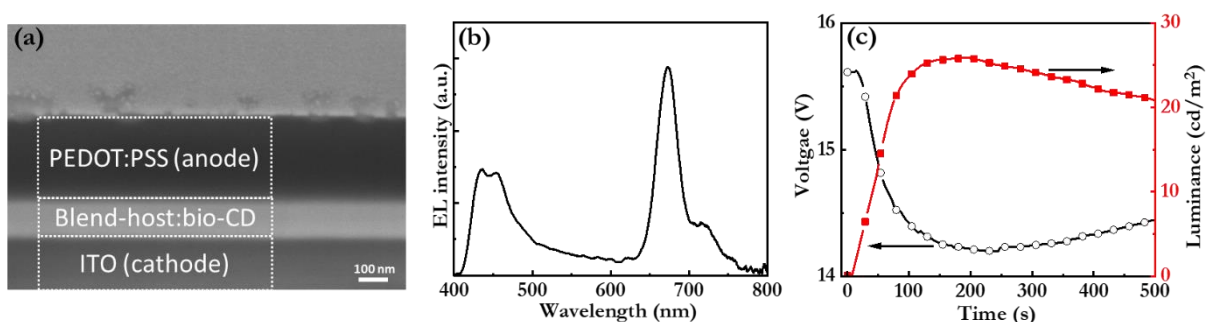


Figure S6. (a) A cross-sectional SEM image of the ITO/blend-host:bio-CD/PEDOT:PSS LEC device structure. (b) The steady-state EL spectrum and (c) the temporal evolution of the luminance and the voltage for the LEC with a spray-coated PEDOT:PSS top electrode. The device was driven by a constant current density of 154 mA/cm^2 .