



Supplementary Materials

Dye Plants Derived Carbon Dots for Flexible Secure Printing

Linlin Li ¹, Yuanyuan Han ¹, Lihua Wang ², Wei Jiang ^{1,*} and Haiguang Zhao ^{2,*}¹ College of Textiles & Clothing, Qingdao University, No. 308 Ningxia Road, Qingdao 266071, China² State Key Laboratory of Bio-Fibers and Eco-Textiles, College of Physics, Qingdao University, No. 308 Ningxia Road, Qingdao 266071, China

* Correspondence: weijiangqd@qdu.edu.cn (W.J.); hgzhao@qdu.edu.cn (H.Z.)

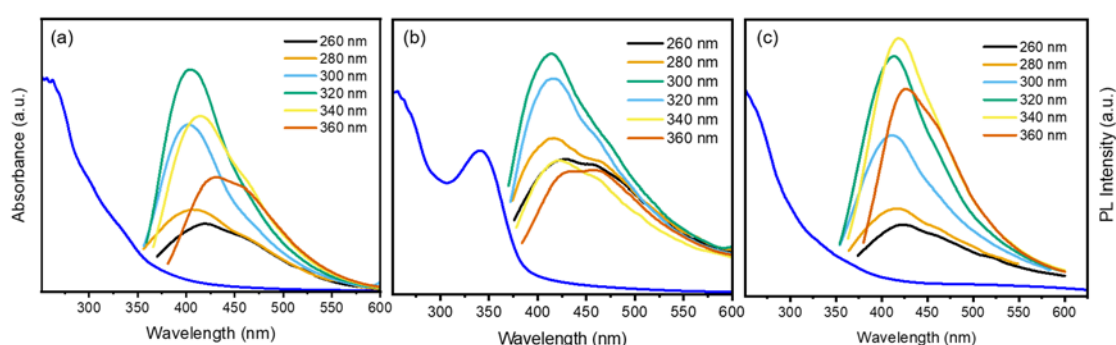


Figure S1. Absorption and PL spectra of the C-dots prepared using water as solvent (a): Indigo C-dots; (b): *Carcuma longa* C-dots; (c): *Sophora japonica* L. C-dots.

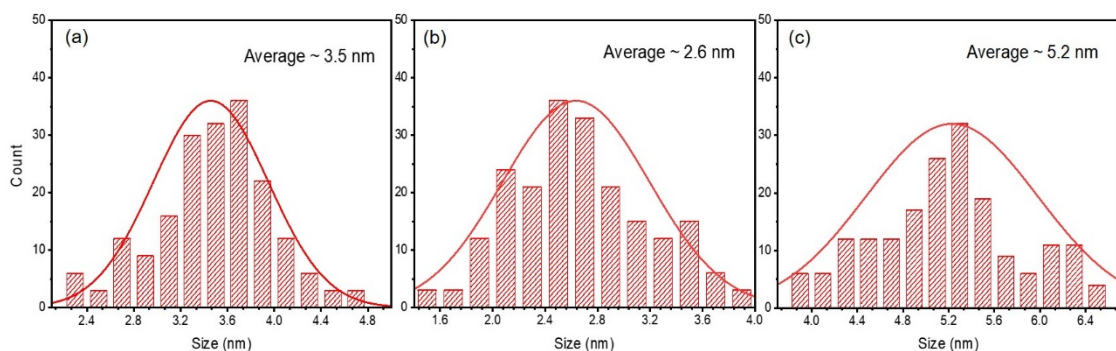


Figure S2. Diameter distribution of C-dots. (a): Indigo C-dots; (b): *Carcuma longa* C-dots; (c): *Sophora japonica* L. C-dots.

Table S1. Quantitative analysis results of XPS data for C-dots derived from different natural dyes.

Sample	C (%)	O (%)	N (%)	Cl (%)	Si (%)	S (%)	Se (%)
Indigo C-dots	71.98	17.24	3.89	3.32	2.95	0.62	0
<i>Carcuma longa</i> C-dots	78.54	17.21	1.68	0.46	1.61	0.49	0
<i>Sophora japonica</i> L. C-dots	64.47	26.56	5.92	2.89	0	0	0.17

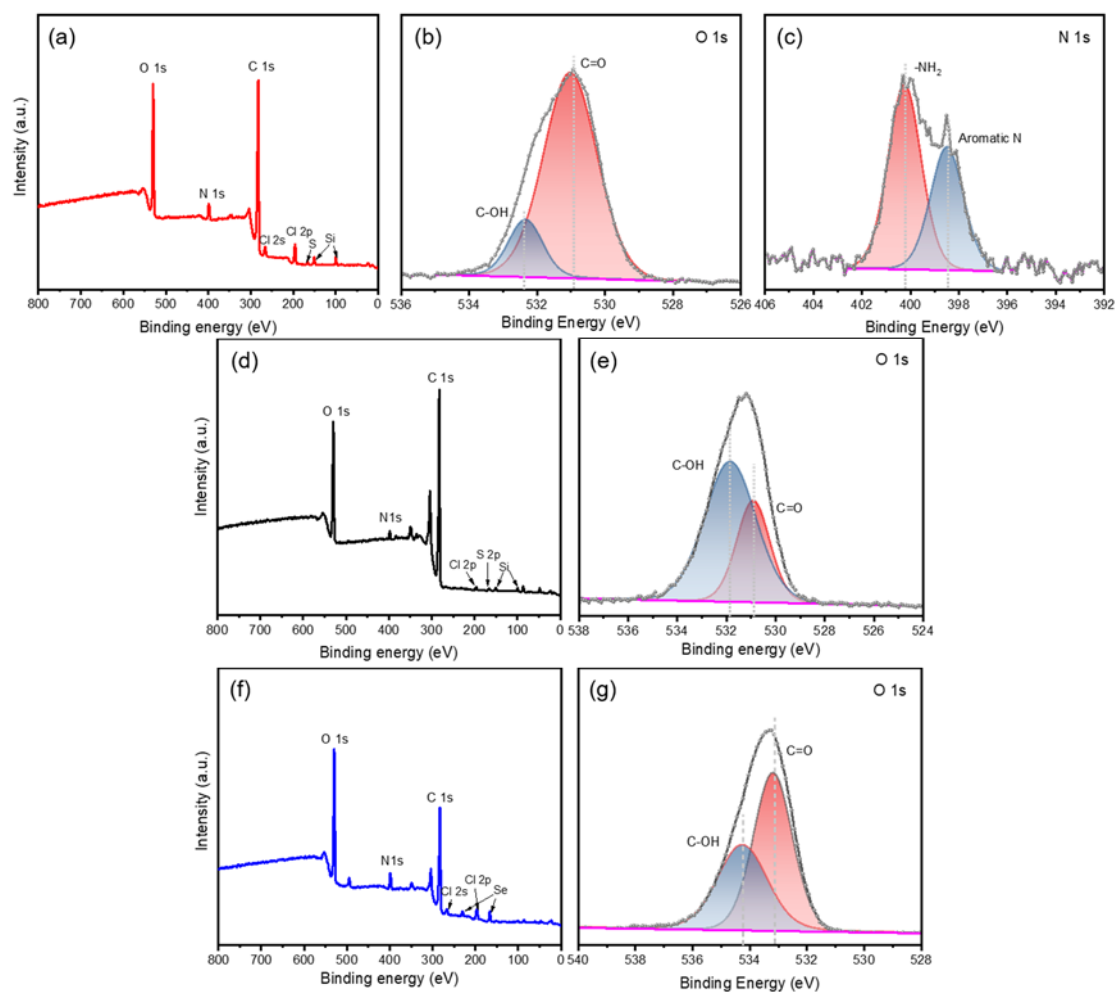


Figure S3. XPS full survey and high resolution XPS spectra. The C-dots were prepared using (a,b,c) Indigo, (d,e) *Carcuma longa*, and (f,g) *Sophora japonica* L.

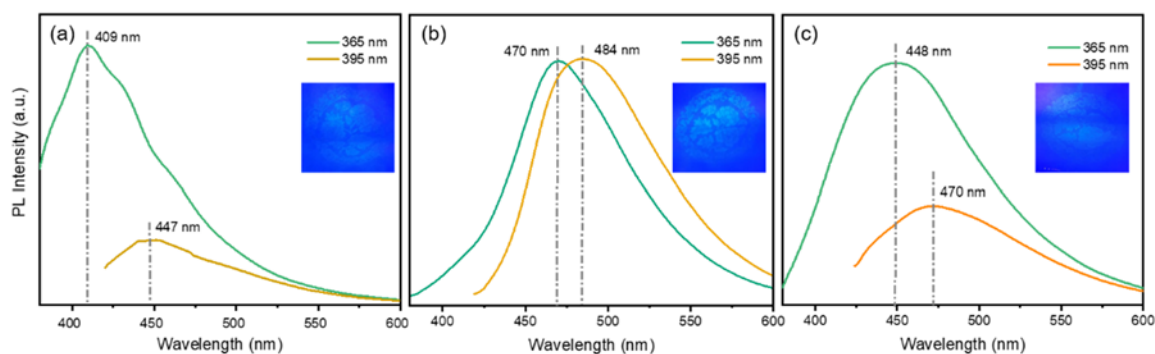


Figure S4. PL spectra of C-dots inks and printed patterns on folded flexible fabrics. The C-dots were derived from (a) Indigo; (b) *Carcuma longa* and (c) *Sophora japonica* L. Insets: the folded pattern on flexible cotton fabric under 395 nm illumination.

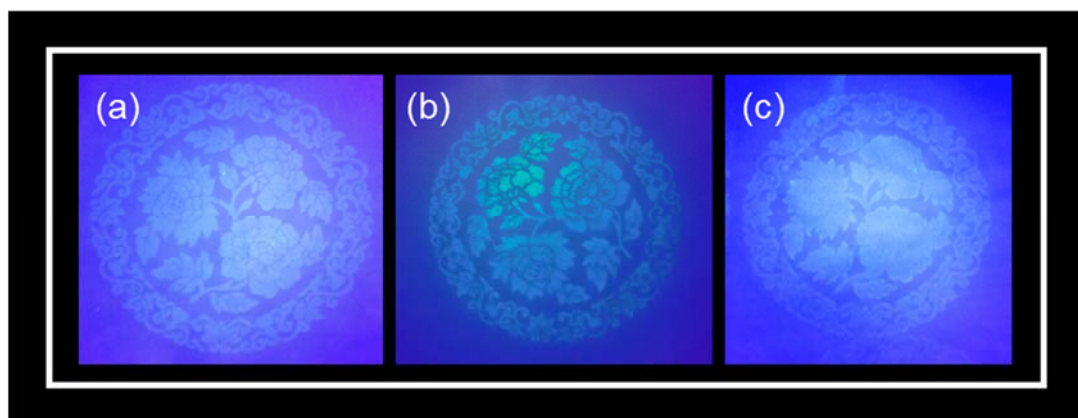


Figure S5. The printed anti-counterfeit patterns on cotton fabric after 3 months of storage upon 395 nm illumination. The C-dots were prepared using (a) Indigo, (b) *Carcuma longa*, and (c) *Sophora japonica* L.

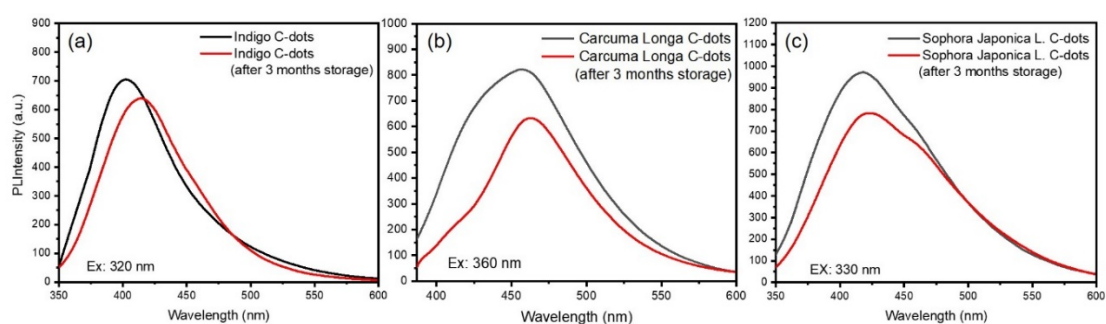


Figure S6. PL spectra of C-dots solution after 3 months of storage. The C-dots were prepared using (a) Indigo, (b) *Carcuma longa*, and (c) *Sophora japonica* L.

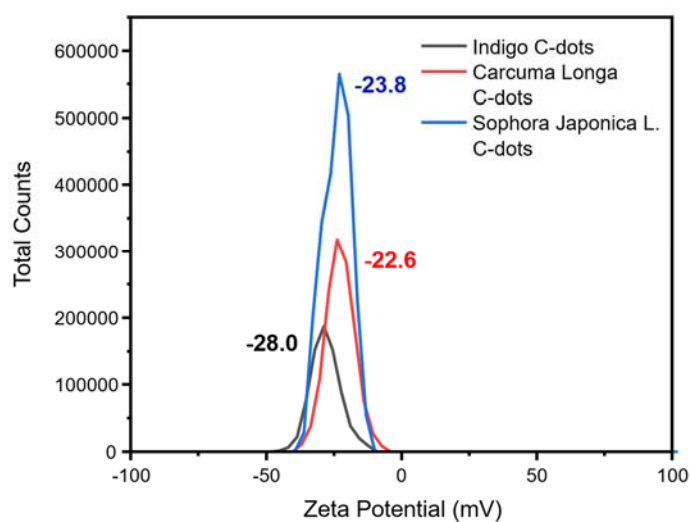


Figure S7. Zeta potential of C-dots derived from indigo, *Carcuma longa* and *Sophora japonica* L.