Supporting information

Evaluating the dialysis time required for carbon dots by HPLC and the properties of the carbon dots after HPLC fractionation

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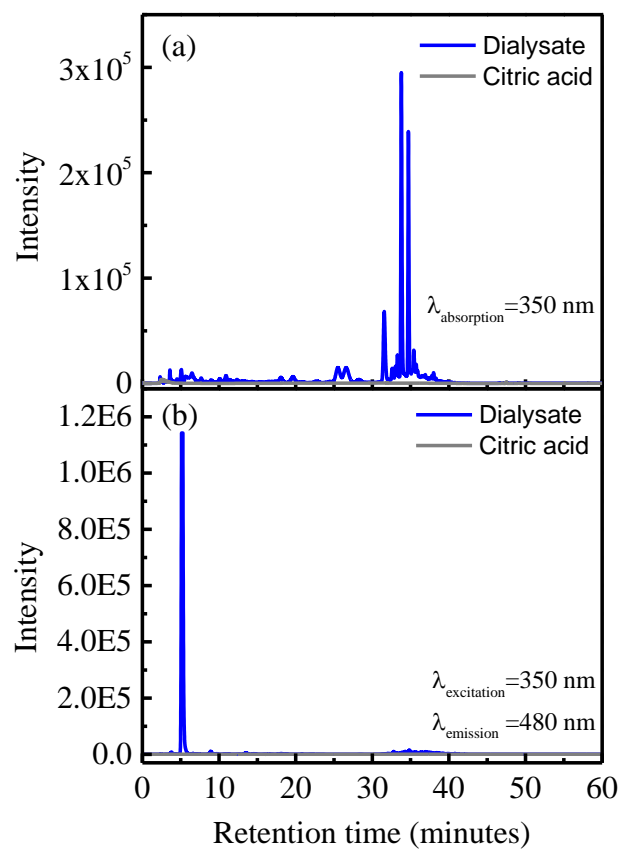
Changhua, 50007, Taiwan

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Fig. S₁: (a) The UV-HPLC and (b)the FL-HPLC of the dialysate (blue line) and the citric acid (gray line). The dialysate was collected after 3 hours dialysis.
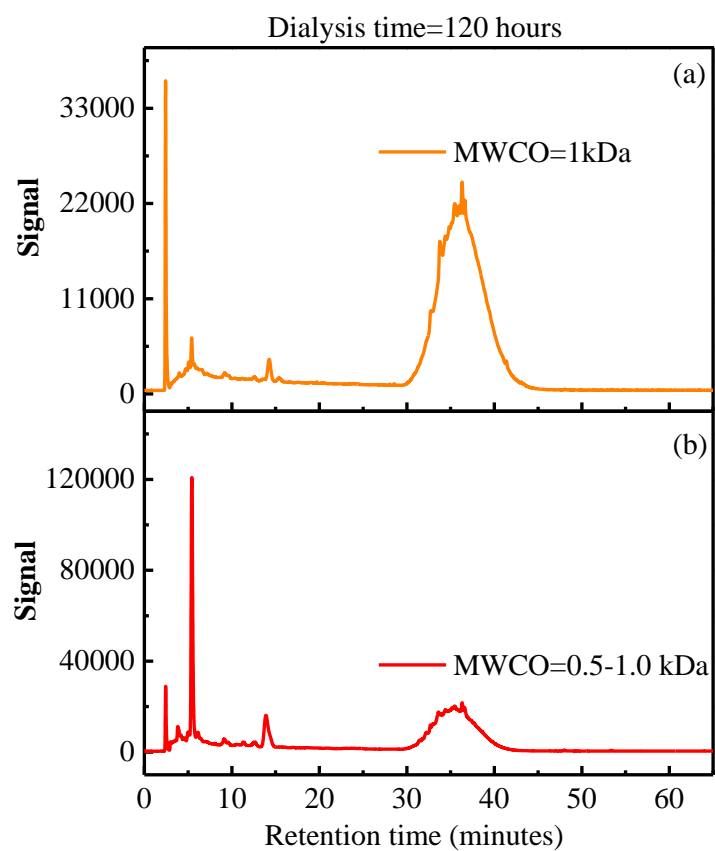
Fig. S₂: The FL-HPLC of the C-dots dialyzed using (a) MWCO=1.0 kDa and (b) MWCO=0.5-1.0 kDa membranes.
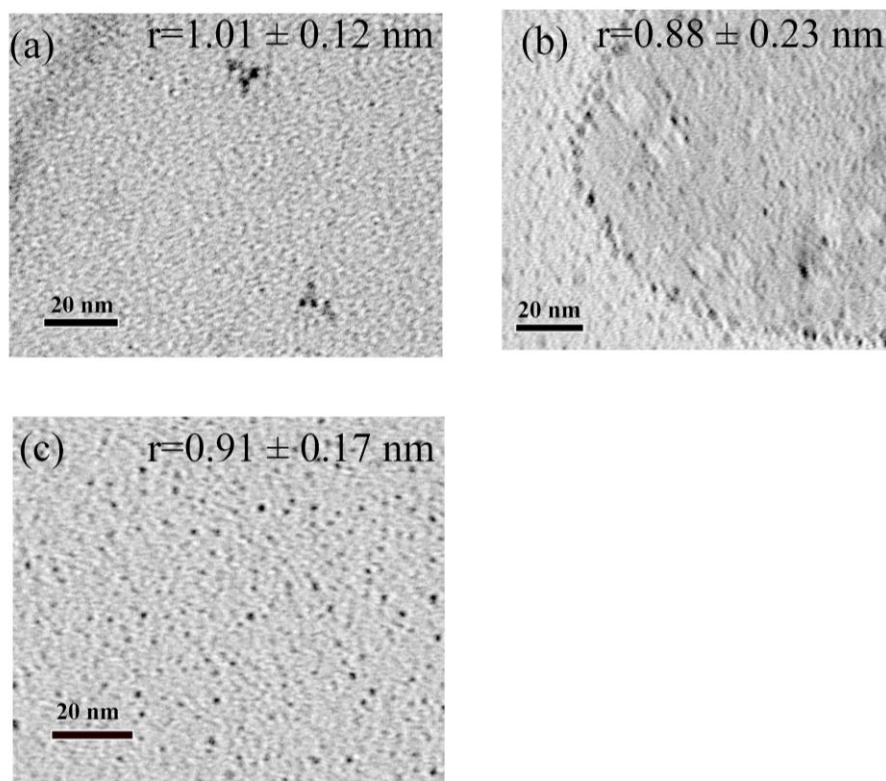
Fig. S₃: The TEM images of (a) the C-dots (α), (b) the C-dots (β) and (c) the C-dots (γ). The averaged radius of C-dots indicates in the figures.
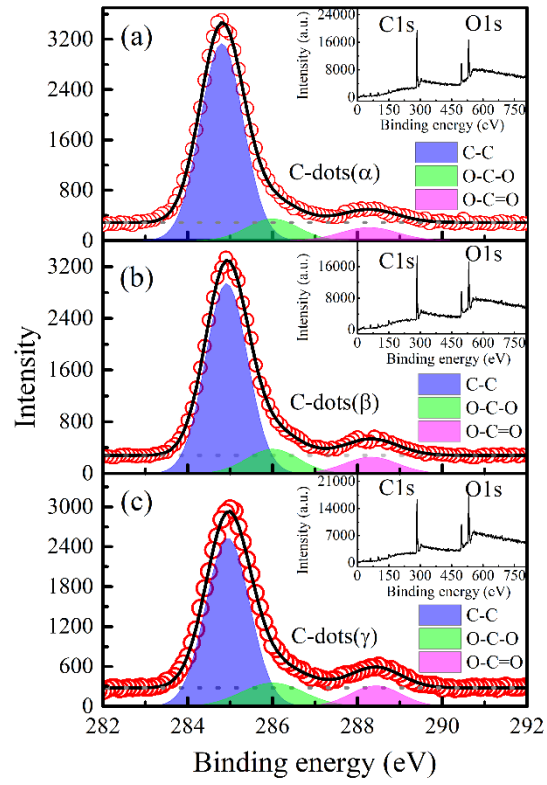
Fig. S₄: The XPS C1s spectra of a:C-dots (α); b:C-dots (β) and c:C-dots(γ). The XPS survey spectrum of each C-dots is indicated in the inset.
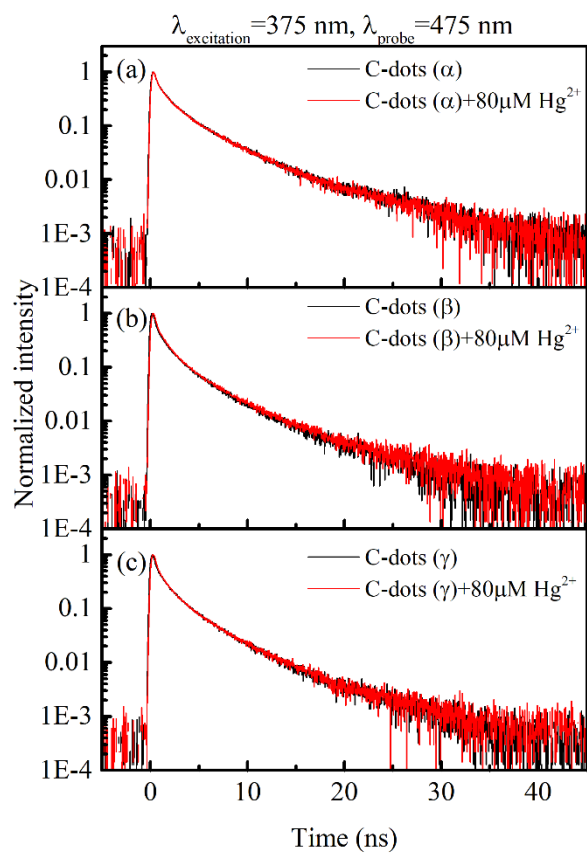
Fig. S$_5$: The fluorescence decay dynamics of C-dots in the absence and the presence of Hg^{2+} ions.

Fig. S6: (a) The TEM image and (b) the energy dispersive x-ray spectra of the C-dots(α)

Fig. S$_7$: (a) The TEM image and (b) the energy dispersive x-ray spectra of the C-dots(β)
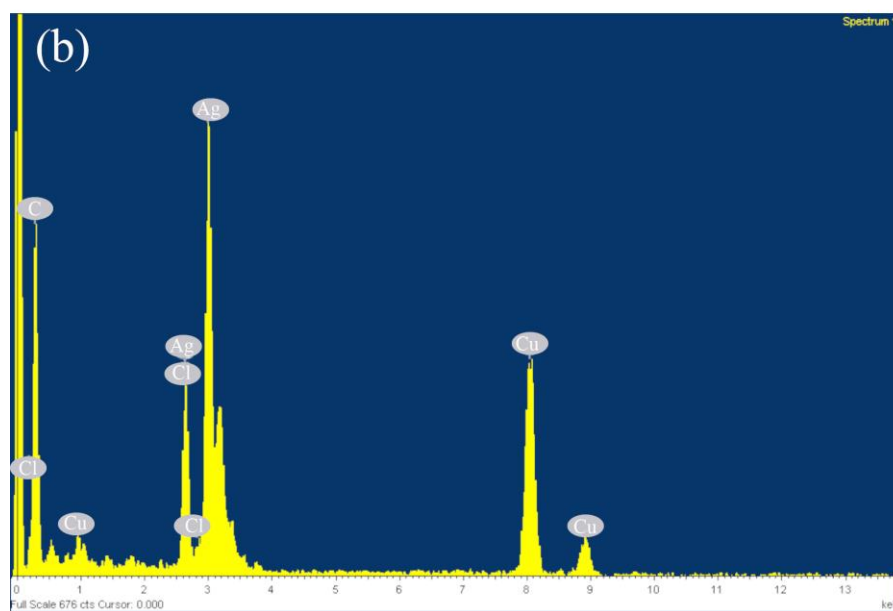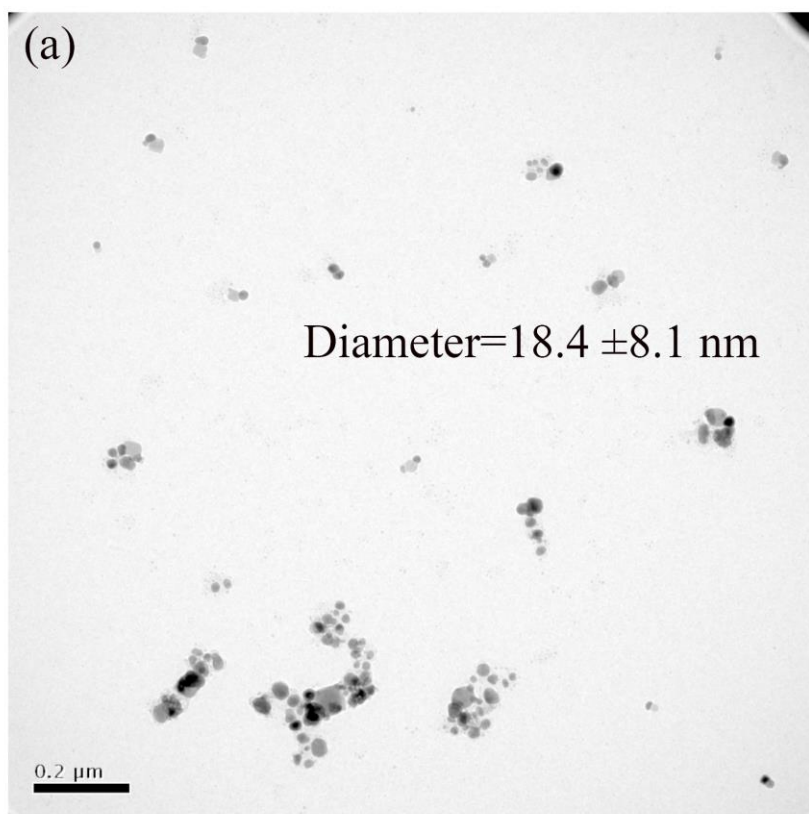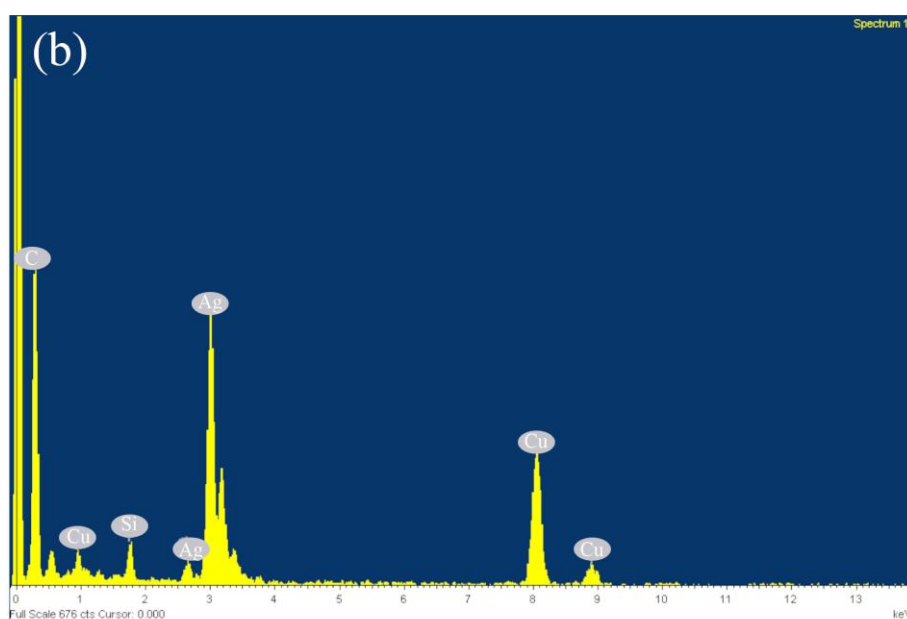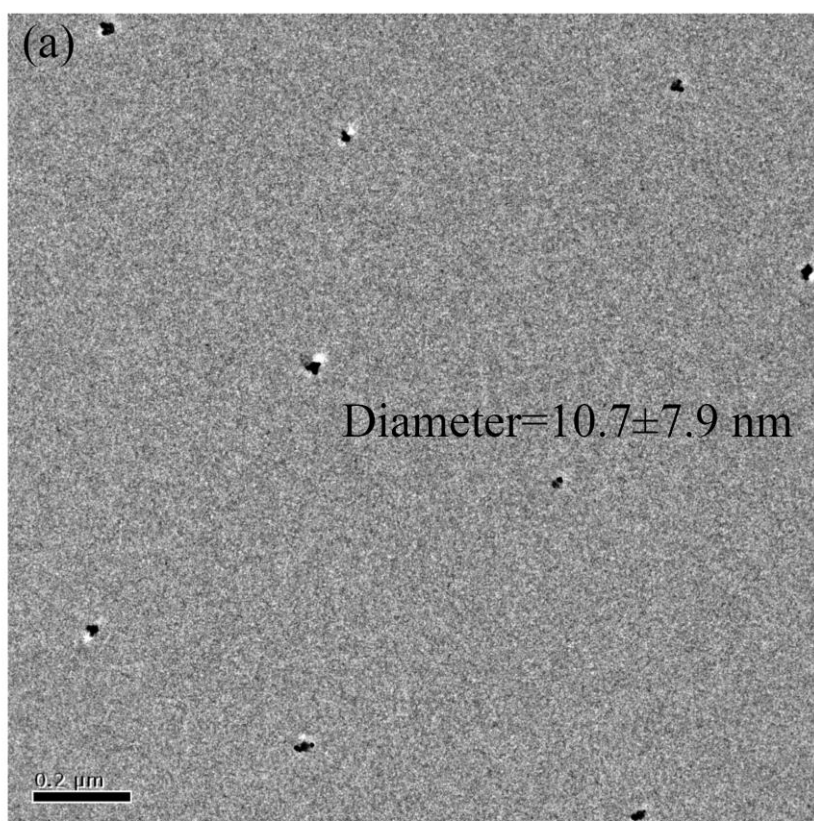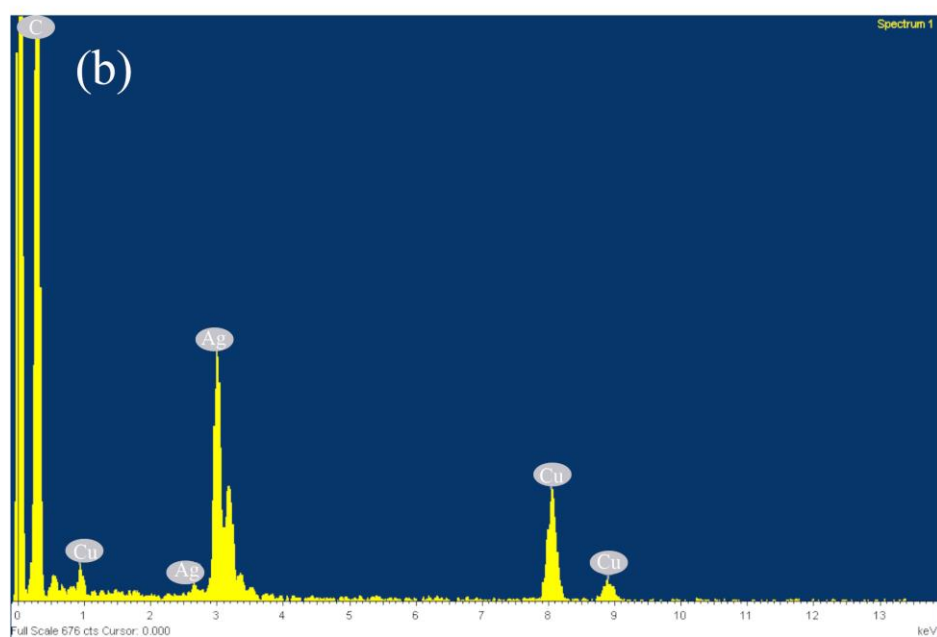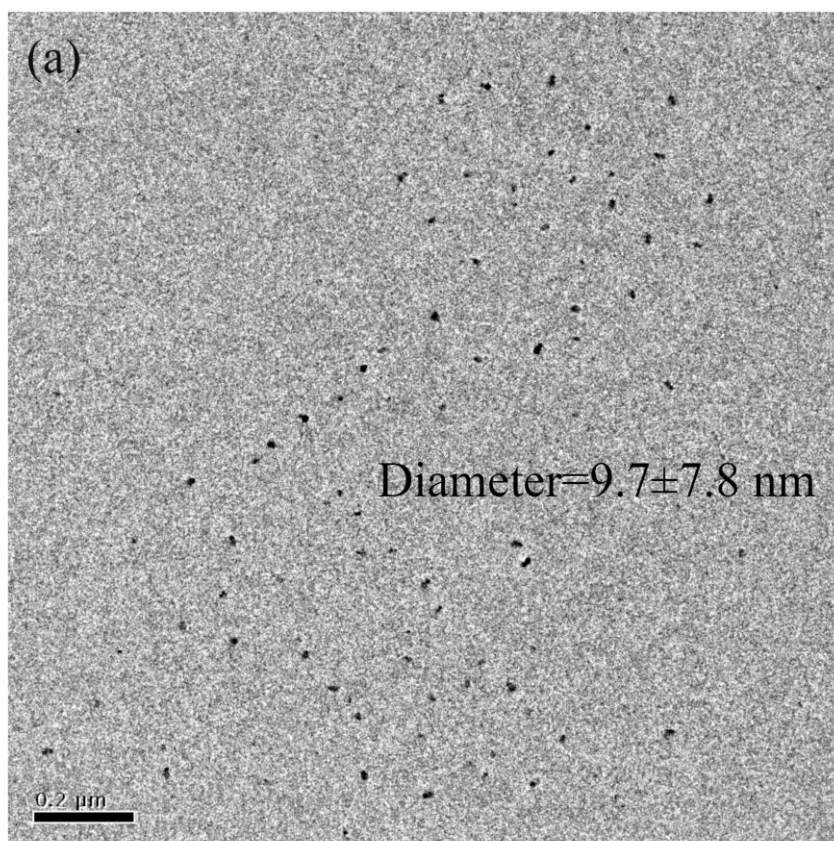
Fig. S8: (a) The TEM image and (b) the energy dispersive x-ray spectra of the C-dots(γ)

Table S_1: The fitting parameters of the fluorescence lifetime, the fluorescence anisotropy decay, and fluorescence quenching experiments of C-dots

		C-dots(α)	C-dots(β)	C-dots(γ)
[a]Fluorescence decay	τ_1 (a_1)	0.28 ns (0.07)	0.24 ns (0.05)	0.26 ns (0.04)
	τ_2 (a_2)	1.98 ns (0.24)	1.71 ns (0.24)	1.96 ns (0.24)
	τ_3 (a_3)	6.64 ns (0.69)	6.40 ns (0.70)	6.65 ns (0.71)
	$\tau_{average}$	3.62 ns	3.18 ns	3.08 ns
Fluorescence quantum yield	Φ_F	0.91%	1.03%	0.77%
[b]Fluorescence anisotropy	τ_{ani}/ns	0.46 ns	0.53 ns	0.55 ns
Fluorescence quenching	K_a (M^{-1})	6.8×10^4	2.9×10^4	3.6×10^4
	κ	0.27	0.55	0.55

[a] $I(t) = \sum_{i=1}^{3} a_i \tau_i$, $\tau_{average} = \sum_{i=1}^{3} \dfrac{a_i \tau_i^2}{a_i \tau_i}$

[b] $r(t) = A \times e^{-\frac{t}{\tau_{ani}}}$