Electronic Supplementary Material (ESI) for Materials Advances.

Shining a Light on Cells: Amine-Passivated Fluorescent Carbon Dots as Bioimaging Nanoprobes

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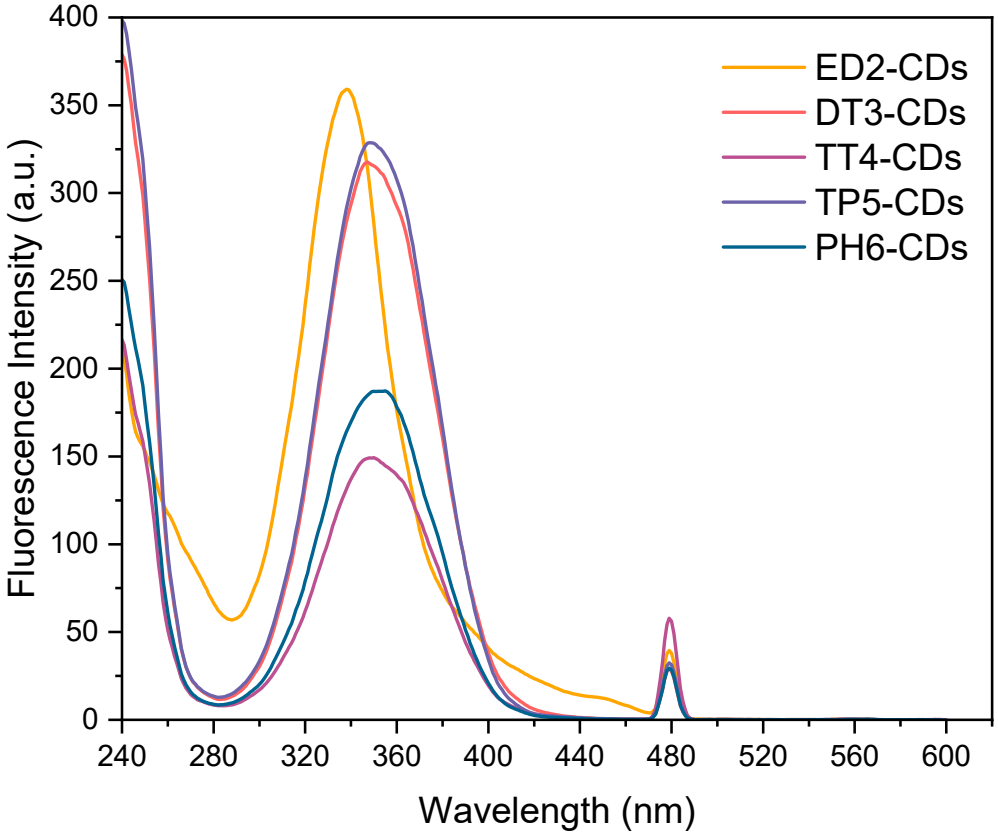
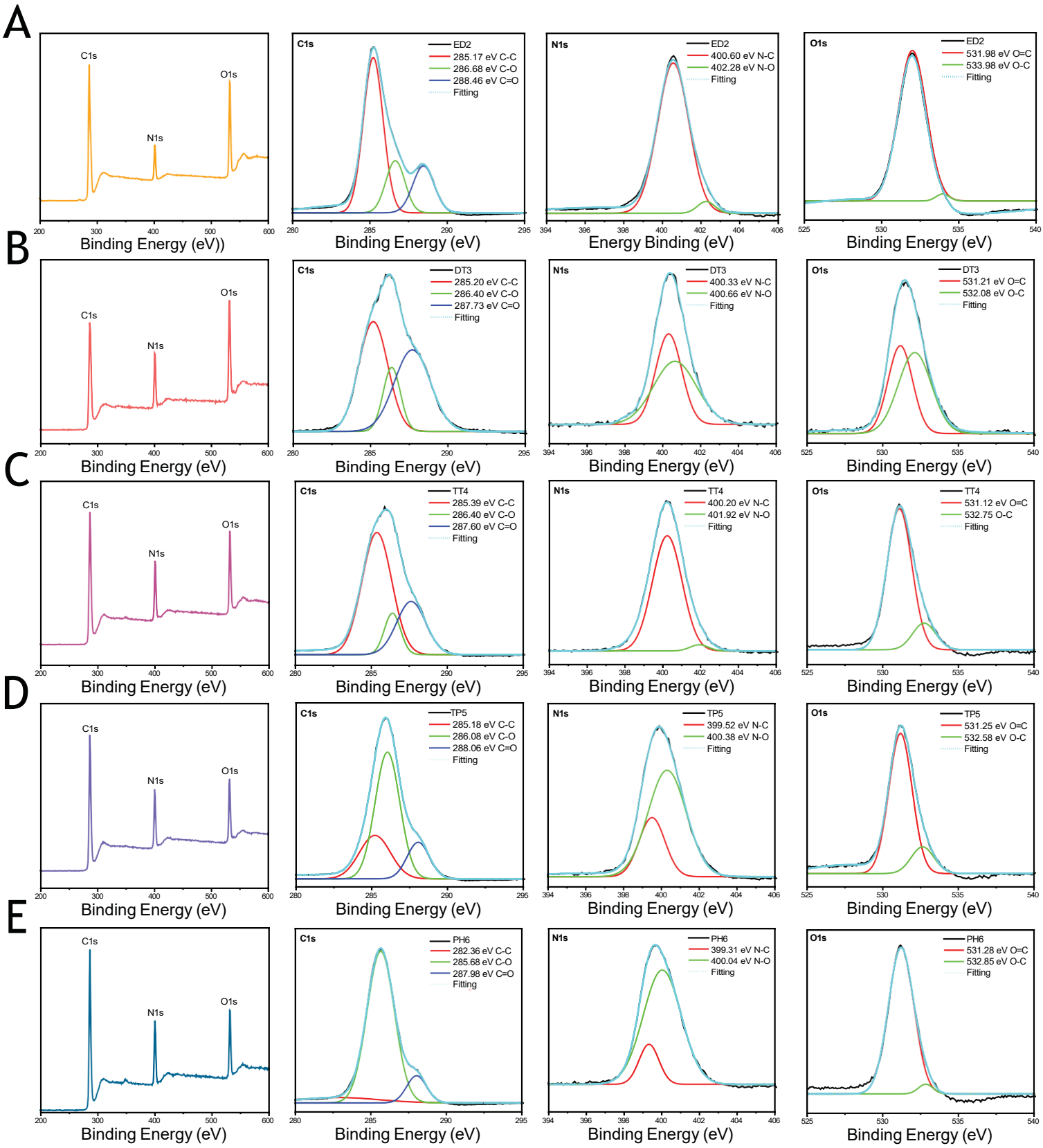
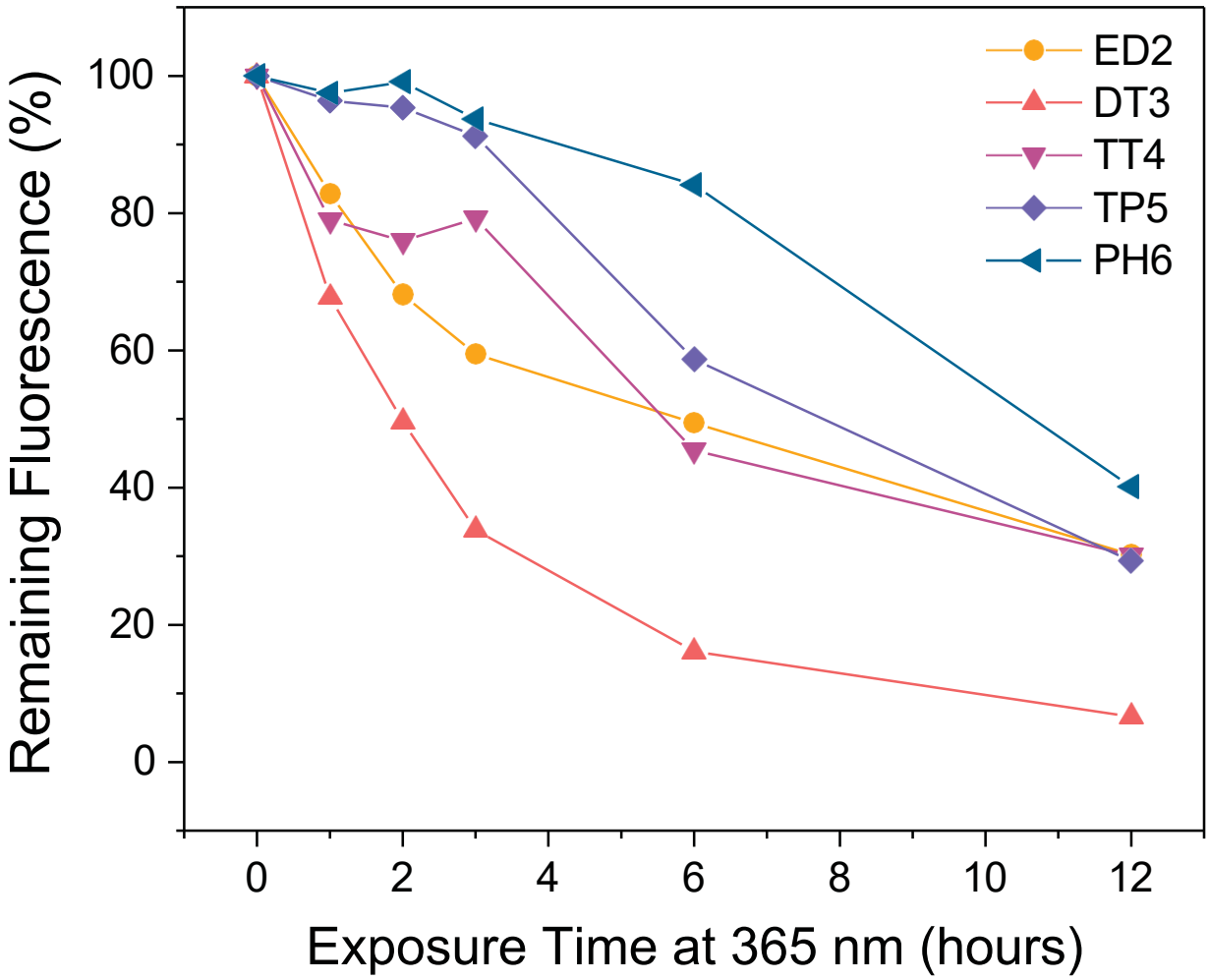


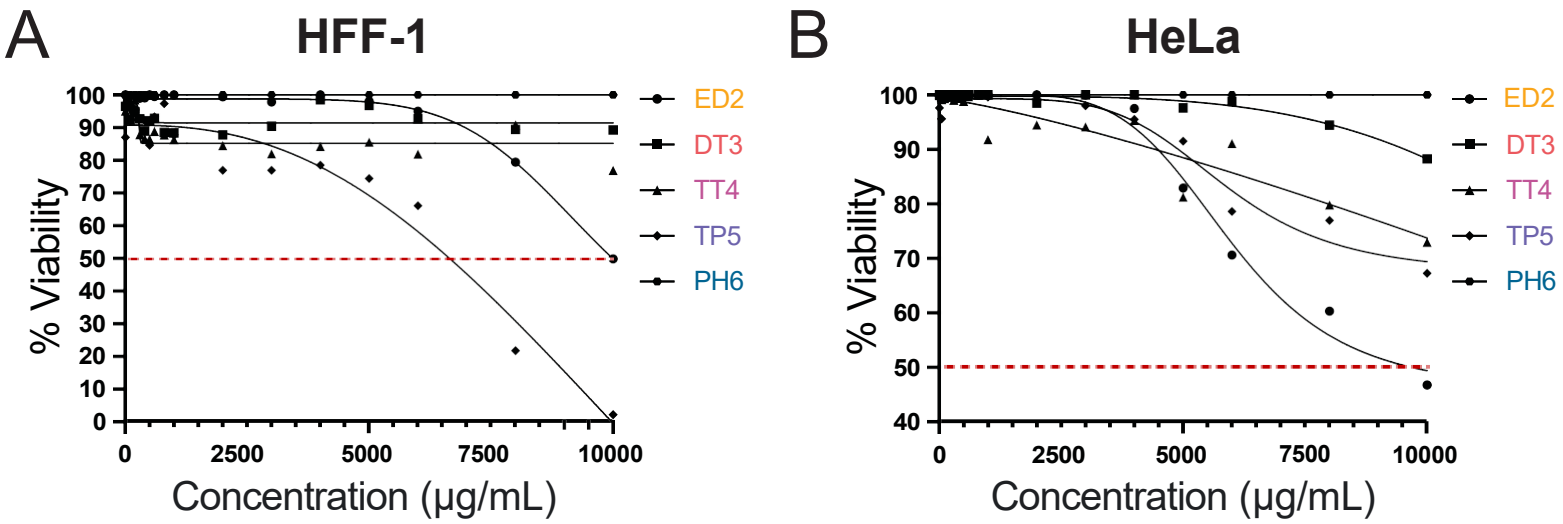
S1. Fluorescence excitation spectra of amine passivated CDs measured at 480 nm emission.



S2. XPS survey and deconvoluted spectra of all CDs showcasing 3 binding energies ascribed to C1s, N1s and O1s for (A) ED2-CDs; (B) DT3-CDs; (C) TT4-CDs; (D) TP5-CDs; (E) PH6-CDs



S3. Amine-passivated CDs are highly photostable. A graph shows the fluorescence (%) of CDs following exposure to 365 nm light over a period of 0-12 hours.



S4. Cell viability in HFF-1 and HeLa cells after treatment with amine passivated carbon dots (A) The left graph shows the IC50 (dotted line) for HFF-1 cell viability, after treatment with varying concentrations of the different CDs for three population doubling times (7,500 µg/mL and 10,000 µg/mL for TP5-CDs and ED2-CDs respectively, and >10,000 µg/mL for TT4-, DT3-, PH6-CDs). (B) The right graph shows the IC50 (dotted line) for HeLa cell viability, after treatment with various concentrations of the different CDs for three population doubling times (10,000 µg/mL for ED2-CDs and >10,000 µg/mL for DT3-, TT4-, TP5- and PH6-CDs).

Table S1. One-Way ANOVA and Paired t-test statistical analysis for cellular uptake of CDs in both HeLa and HFF-1 cells for **Fig.3**

Statistical Test	Cell Line	Groups	P-value	Data Interpretation
One-way ANOVA	**HeLa**	ED2 DT3 TT4 TP5 PH6	$1.76E^{-32}$	Population means are significantly different
Paired t-test	**HeLa**	ED2:PH6	$1.33E^{-9}$	Population means are significantly different
		DT3:PH6	$1.81E^{-9}$	Population means are significantly different
		TT4:PH6	$1.09E^{-9}$	Population means are significantly different
		TP5:PH6	$5.58E^{-7}$	Population means are significantly different
One-way ANOVA	**HFF-1**	ED2 DT3 TT4 TP5 PH6	$7.40E^{-8}$	Population means are significantly different
Paired t-test	**HFF-1**	ED2:PH6	$3.69E^{-4}$	Population means are significantly different
		DT3:PH6	$7.78E^{-7}$	Population means are significantly different
		TT4:PH6	$4.01E^{-5}$	Population means are significantly different
		TP5:PH6	$6.47E^{-5}$	Population means are significantly different

Table S2. One-Way ANOVA and Paired t-test statistical analysis for Lysosome and Cytosol co-localization of CDs in HFF-1 cells for **Fig.4**

Statistical Test	Co-Localization	Groups	P-value	Data Interpretation
One-way ANOVA	**Lysosome**	ED2 DT3 TT4 TP5 PH6	$3.80E^{-32}$	Population means are significantly different
Paired t-test	**Lysosome**	ED2:PH6	$9.71E^{-10}$	Population means are significantly different
		DT3:PH6	$6.10E^{-10}$	Population means are significantly different
		TT4:PH6	$3.01E^{-8}$	Population means are significantly different
		TP5:PH6	$1.83E^{-4}$	Population means are significantly different
One-way ANOVA	**Cytosol**	ED2 DT3 TT4 TP5 PH6	$1.46E^{-11}$	Population means are significantly different
Paired t-test	**Cytosol**	ED2:PH6	$2.36E^{-8}$	Population means are significantly different
		DT3:PH6	$1.45E^{-6}$	Population means are significantly different
		TT4:PH6	$1.44E^{-4}$	Population means are significantly different
		TP5:PH6	$7.78E^{-7}$	Population means are significantly different

Table S3. One-Way ANOVA and Paired t-test statistical analysis for co-localization in the cytosol of CDs in both HeLa and HFF-1 cells for **Fig.5**

Statistical Test	Co-Localization	Groups	P-value	Data Interpretation
One-way ANOVA	**Lysosome**	ED2 DT3 TT4 TP5 PH6	$3.80E^{-32}$	Population means are significantly different
Paired t-test	**Lysosome**	ED2:PH6	$9.71E^{-10}$	Population means are significantly different
		DT3:PH6	$6.10E^{-10}$	Population means are significantly different
		TT4:PH6	$3.01E^{-8}$	Population means are significantly different
		TP5:PH6	$1.83E^{-4}$	Population means are significantly different
One-way ANOVA	**Cytosol**	ED2 DT3 TT4 TP5 PH6	$2.39E^{-11}$	Population means are significantly different
Paired t-test	**Cytosol**	ED2:PH6	$4.64E^{-5}$	Population means are significantly different
		DT3:PH6	0.00172	Population means are significantly different
		TT4:PH6	0.02642	Population means are significantly different
		TP5:PH6	$8.83E^{-5}$	Population means are significantly different