Electronic Supplementary Material (ESI) for Sustainable Food Technology.

Supporting Information of

Synthesis of green fluorescent carbon dots from *Moringa oleifera* for sensing of deltamethrin and fenvalerate in vegetables and rice

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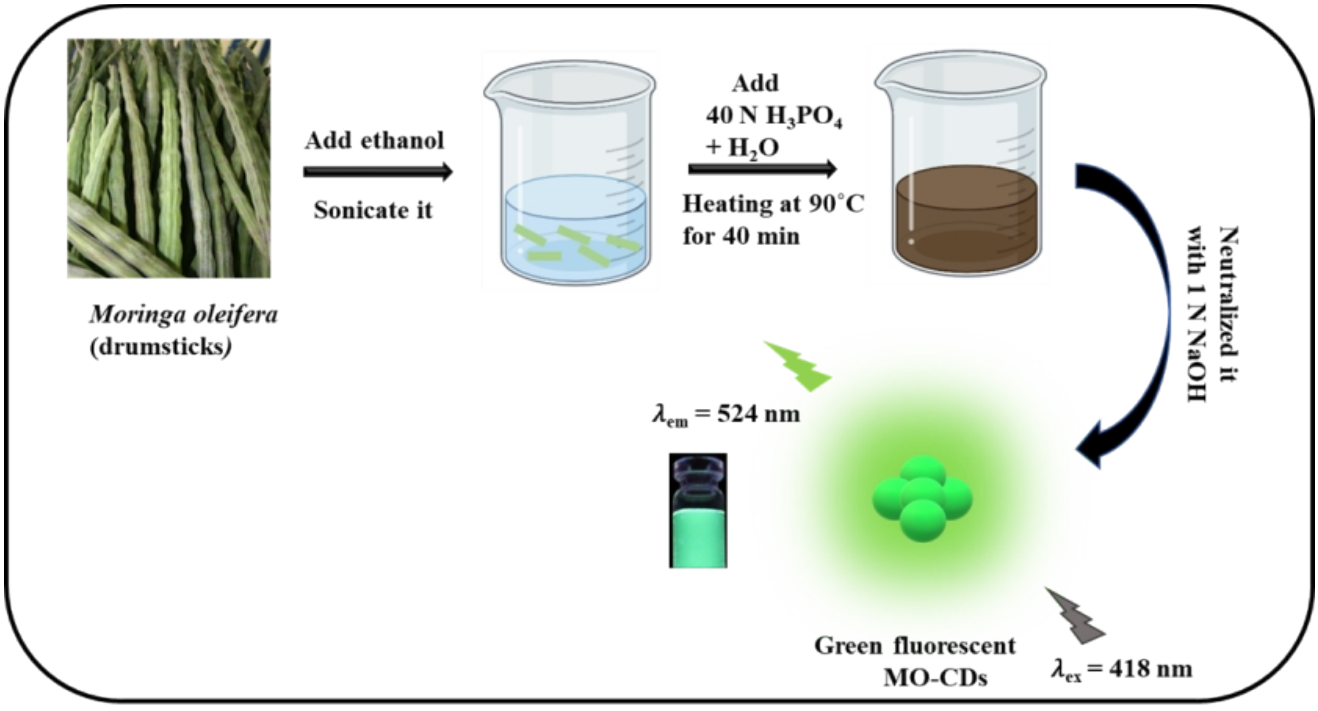

Scheme S1. Schematic representation of MO-CDs synthesis.

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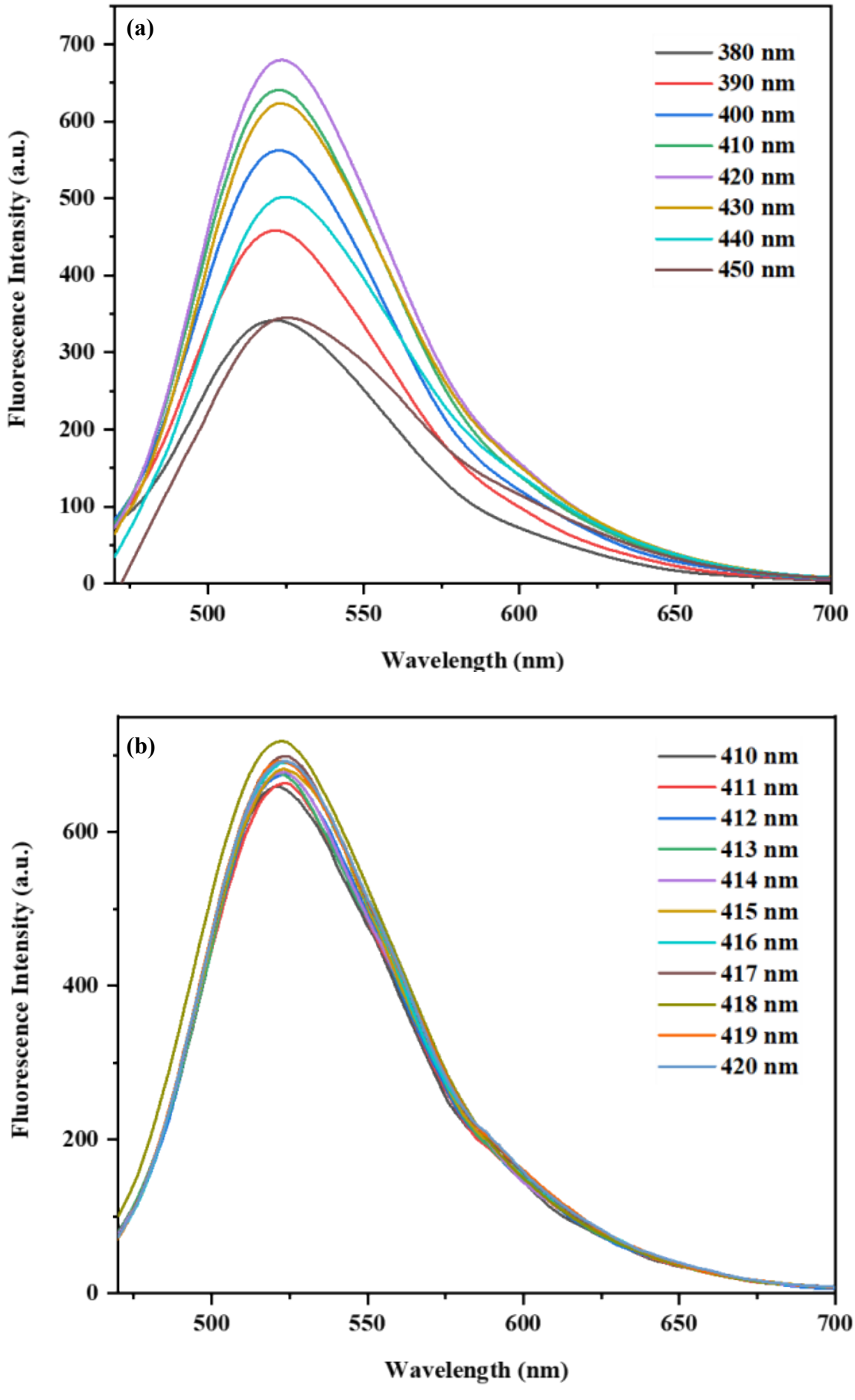

Figure S1. (a) Fluorescence excitation-dependent spectra fr MO-CDs at wavelengths ranging from 380-450 nm, and (b) the maximum excitation wavelength of MO-CD at 418 nm.

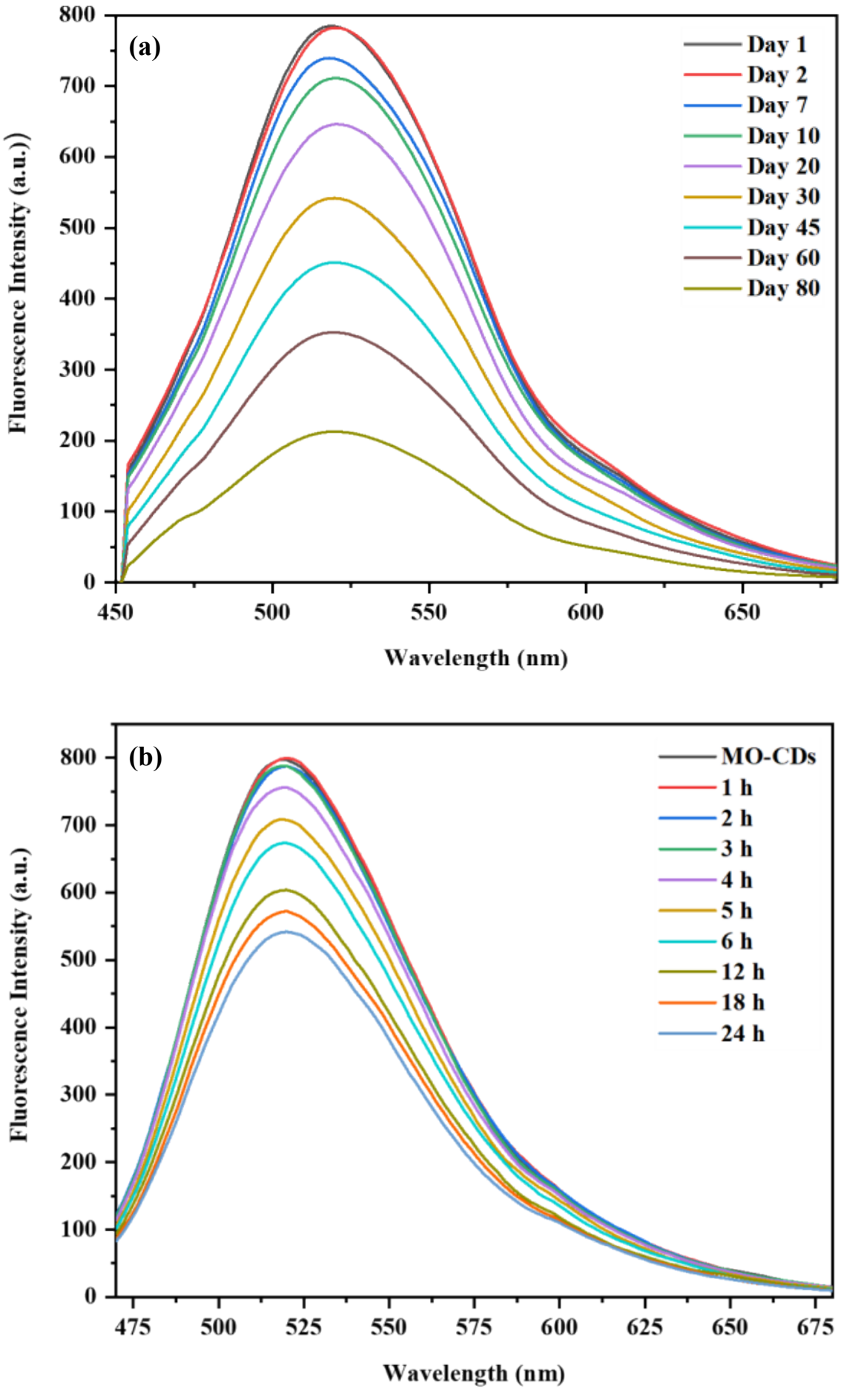

Figure S2. Fluorescence spectra of stability study of MO-CDs (a) up to 80 days, (b) exposing of MO-CDs at various time intervals (1 – 24 h) under UV light at 365 nm.

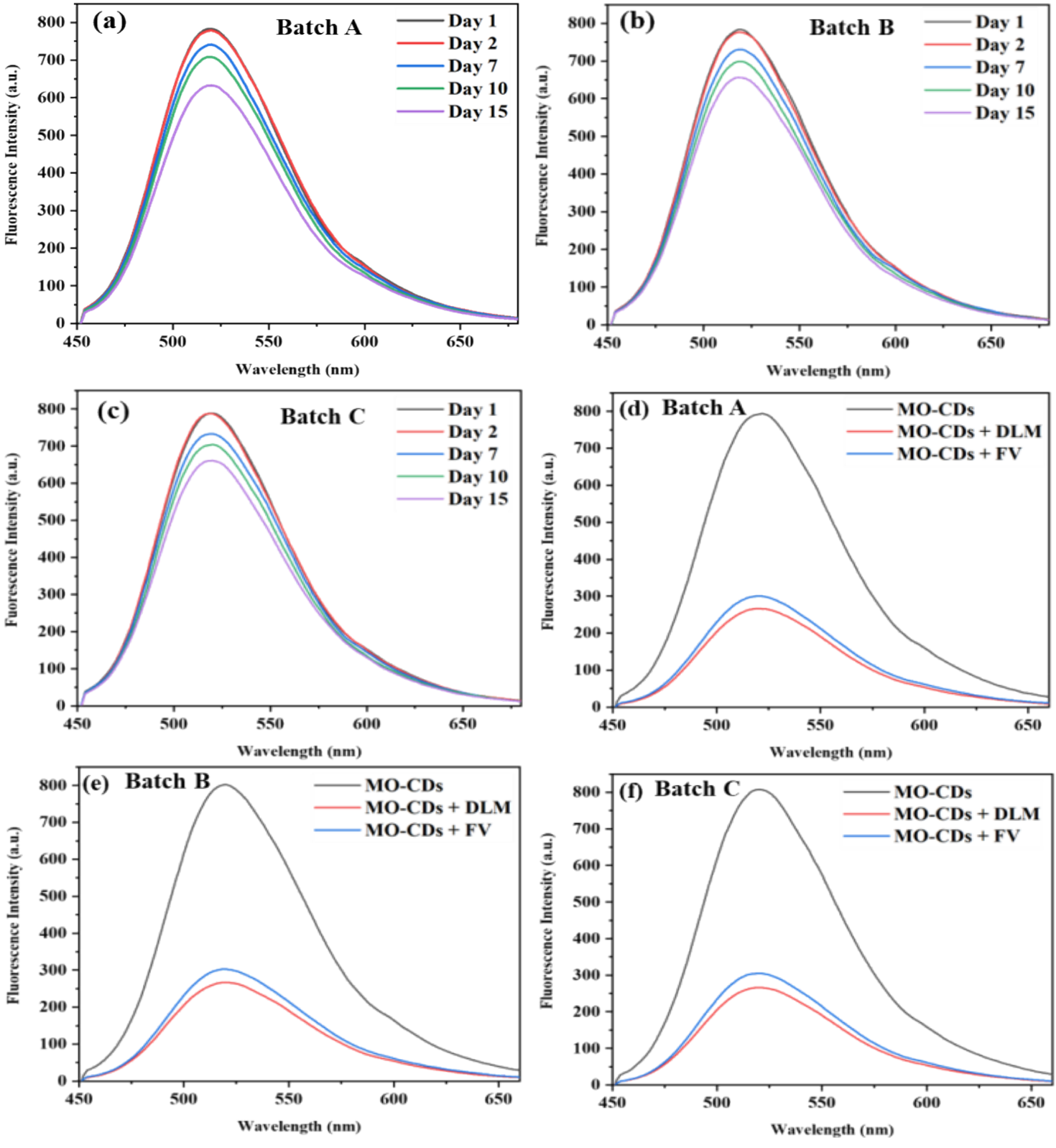

Figure S3. Investigation of reproducibility of developed green chemistry method for preparation of MO-CDs at (a-c) three different batches up to 20 days. Repeatability of developed fluorescence method for the (d-f) detection of DLM and FV using three different batches of MO-CDs as a probe.

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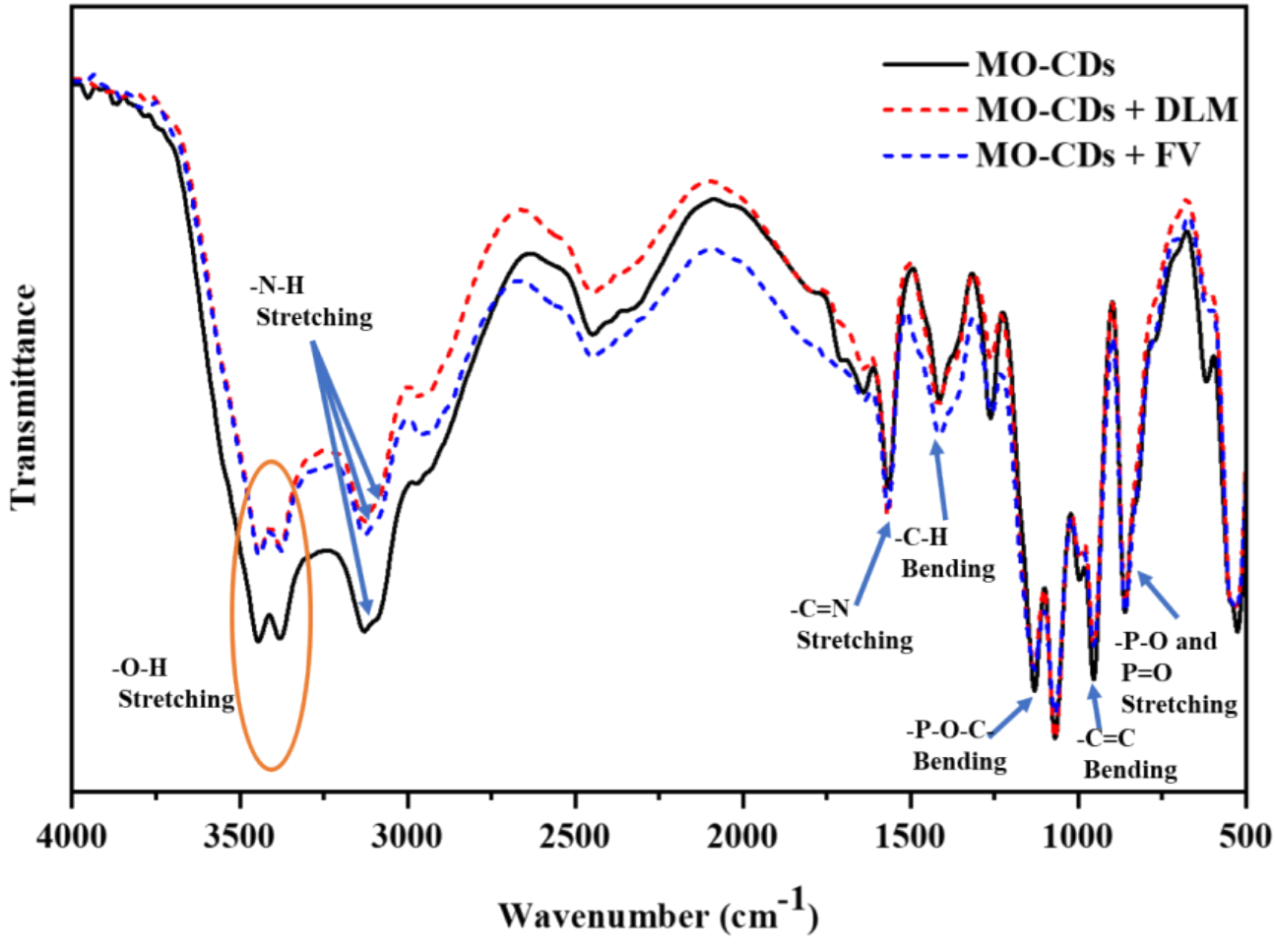

Figure S4. FT-IR spectra of MO-CDs and MO-CDs with DM and FV.

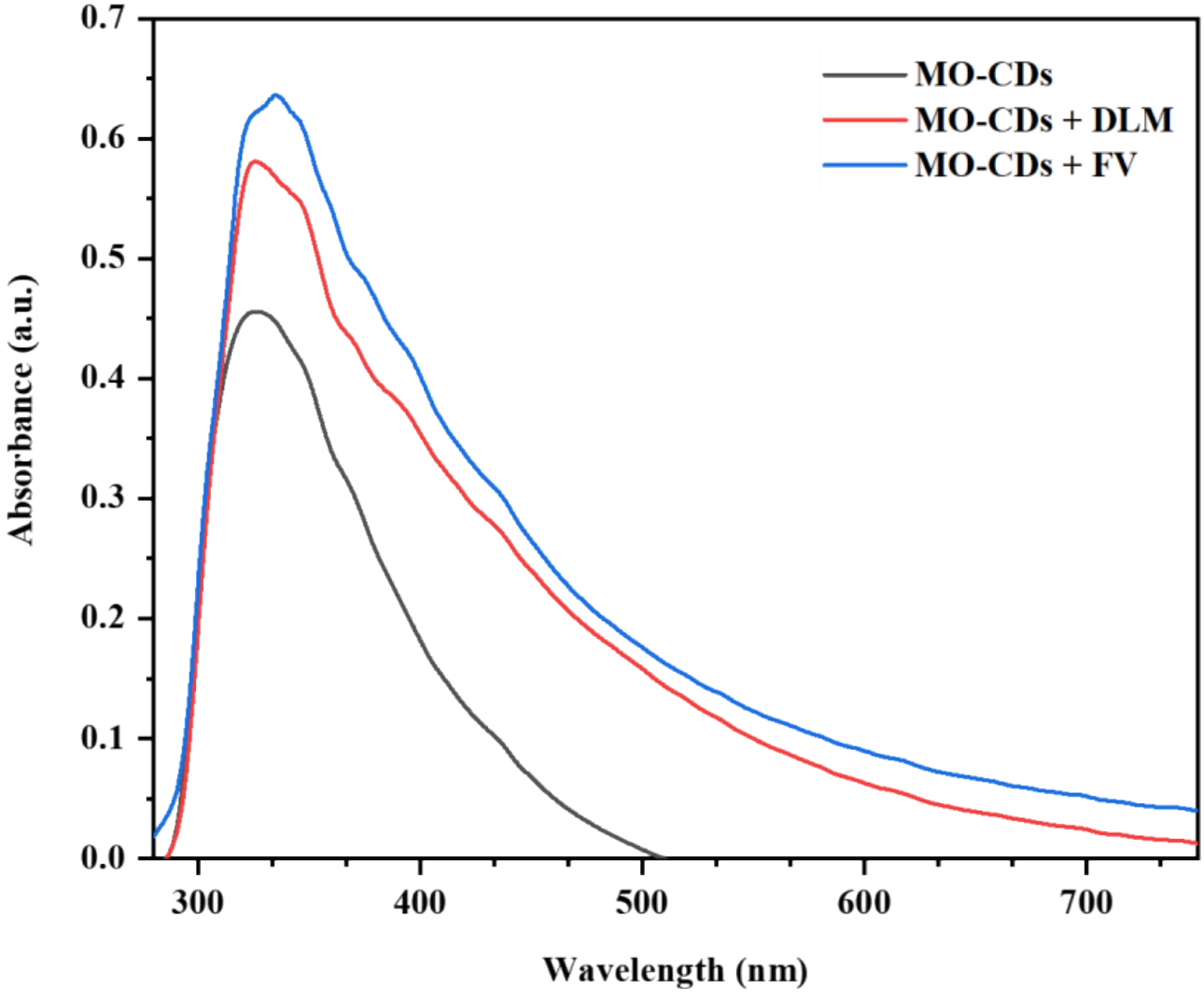

Figure S5. UV-visible spectra of MO-CDs and MO-CDs with DLM and FV.

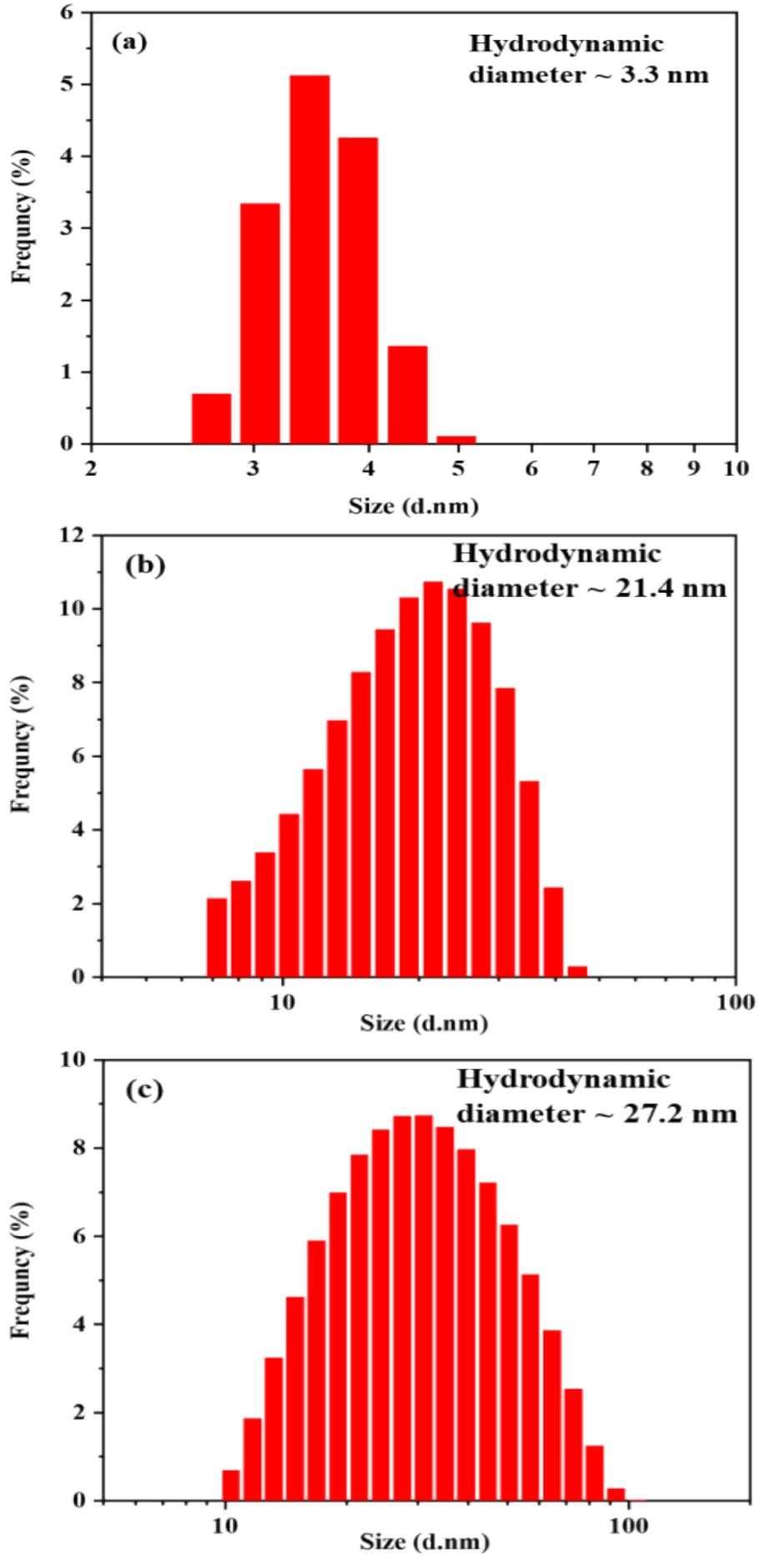

Figure S6. DLS analysis of (a) MO-CDs and MO-CDs with (b) DLM and (c) FV.

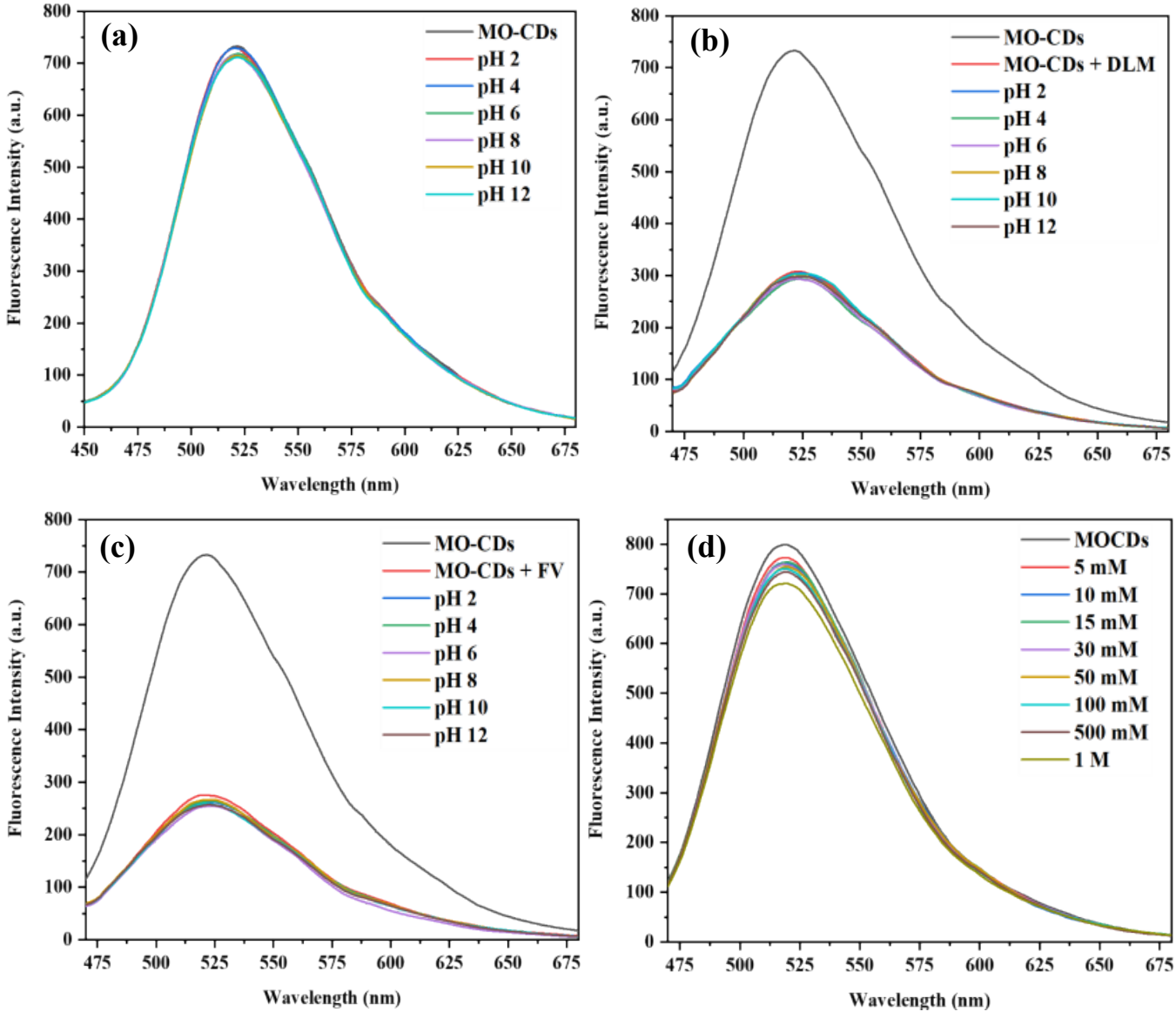

Figure S7. Effect of PBS pH (2.0-12.0) on the fluorescence emission spectra of MO-CDs (a) without DLM and FV, (b & c) with DLM and FV, and (d) emission spectra of MOCDs at various concentrations of NaCl ranging from 5 mM to 1 M.

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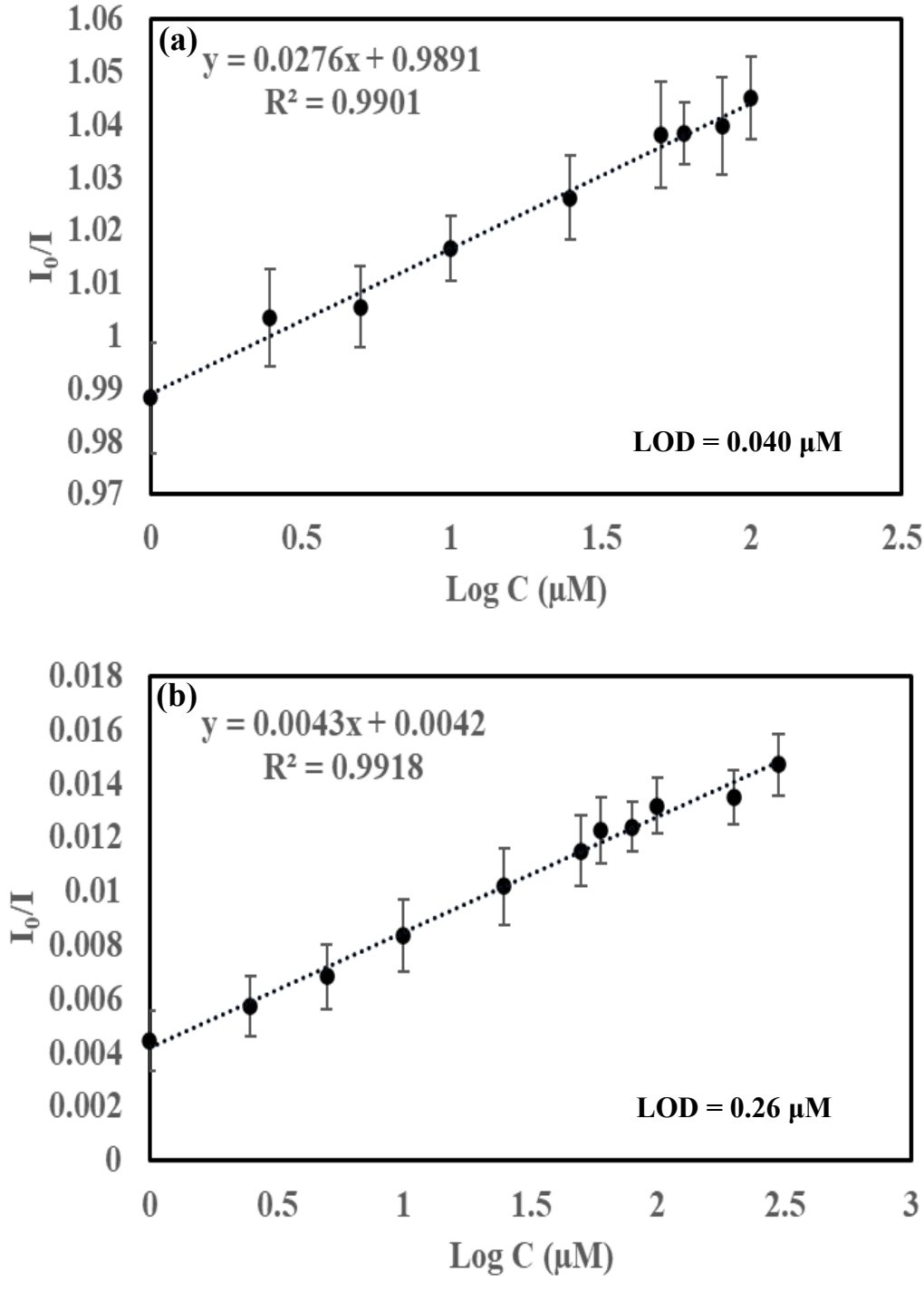

Figure S8 Calibration curve plotted between I_0/I and concentrations of (a) DLM (0.1-100 µM) and (b) FV (0.5- 120).

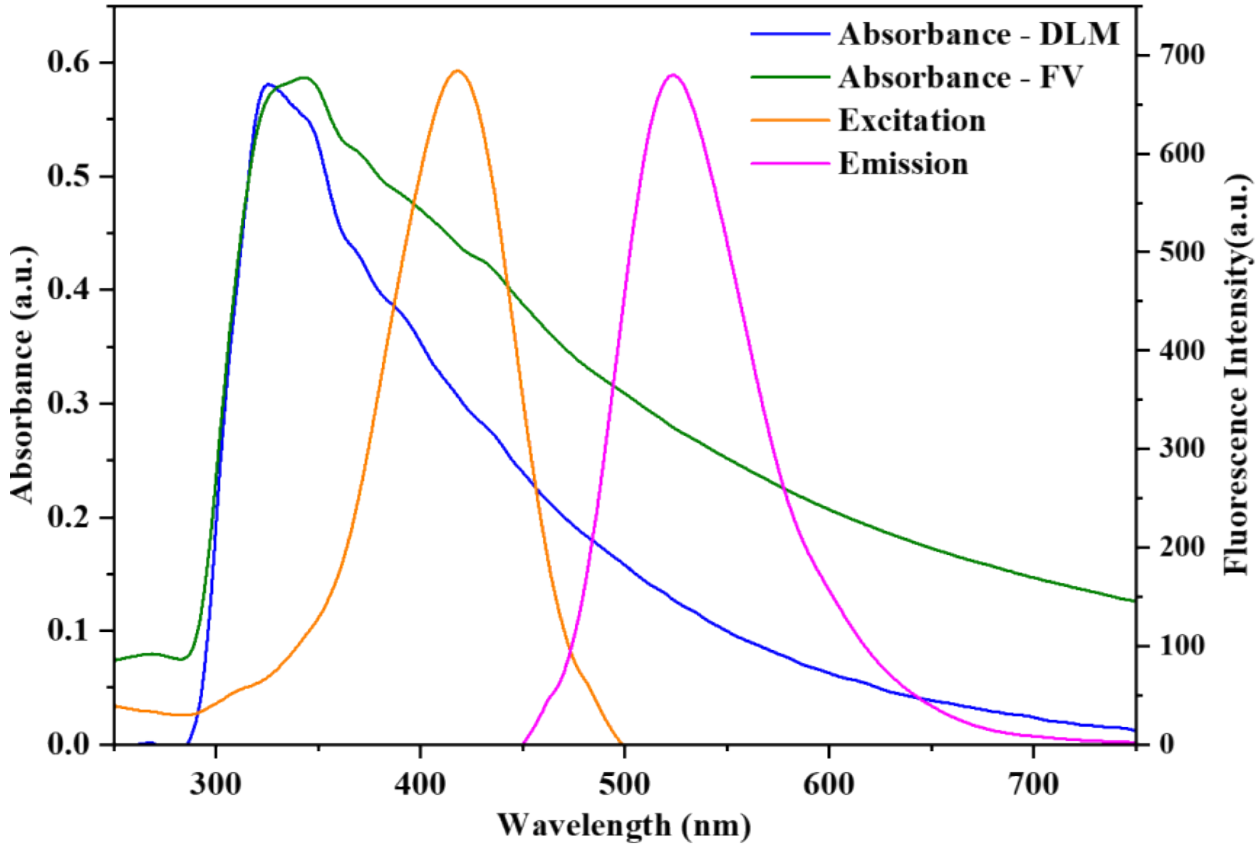

Figure S9. UV-visible spectra of DLM, and FV with fluorescence spectra of MO-CDs.

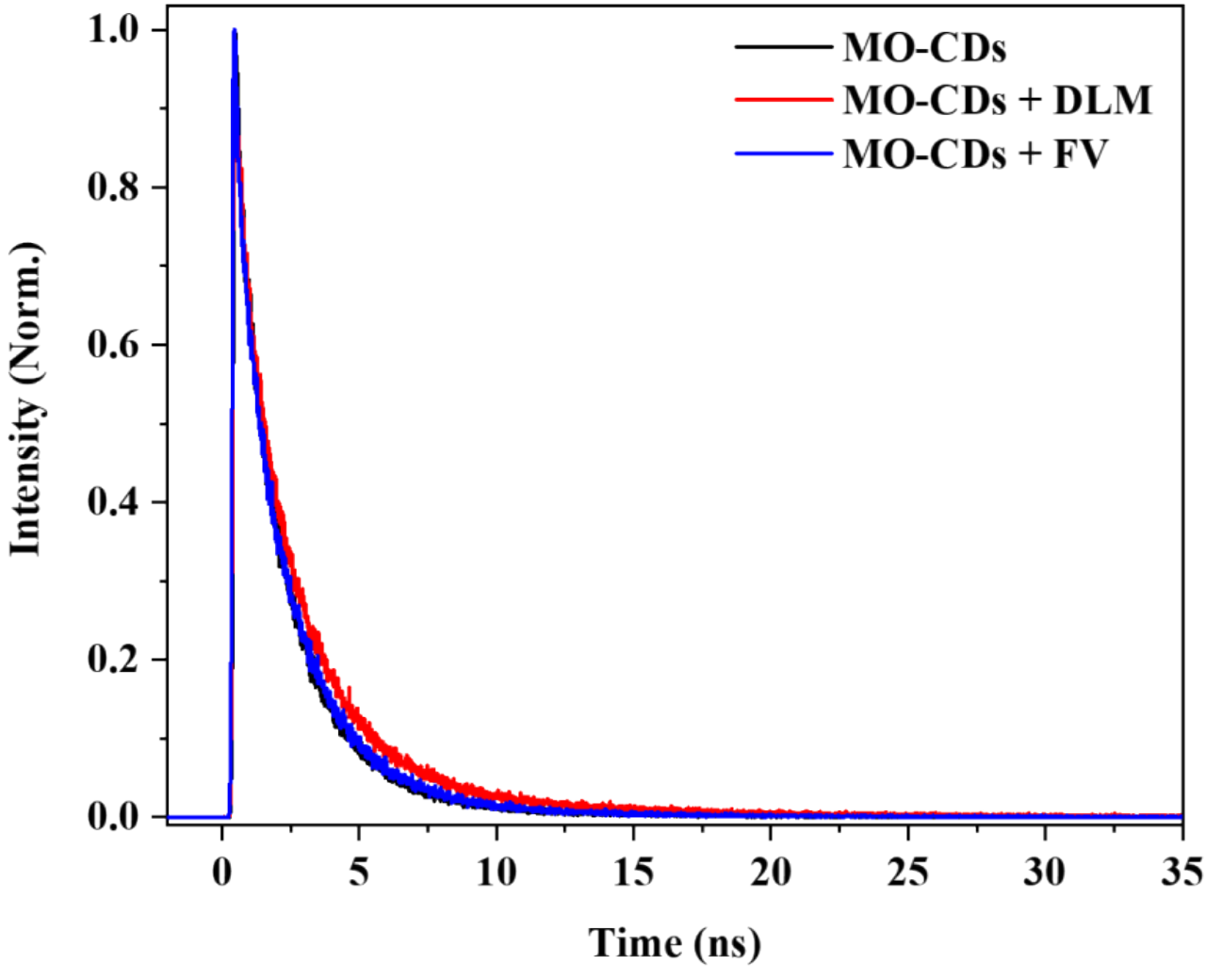

Figure S10 Fluorescence lifetime decay for MO-CDs (1.60 ns), MO-CDs with DLM (2.16 ns), and MO-CDs with FV (1.71 ns).

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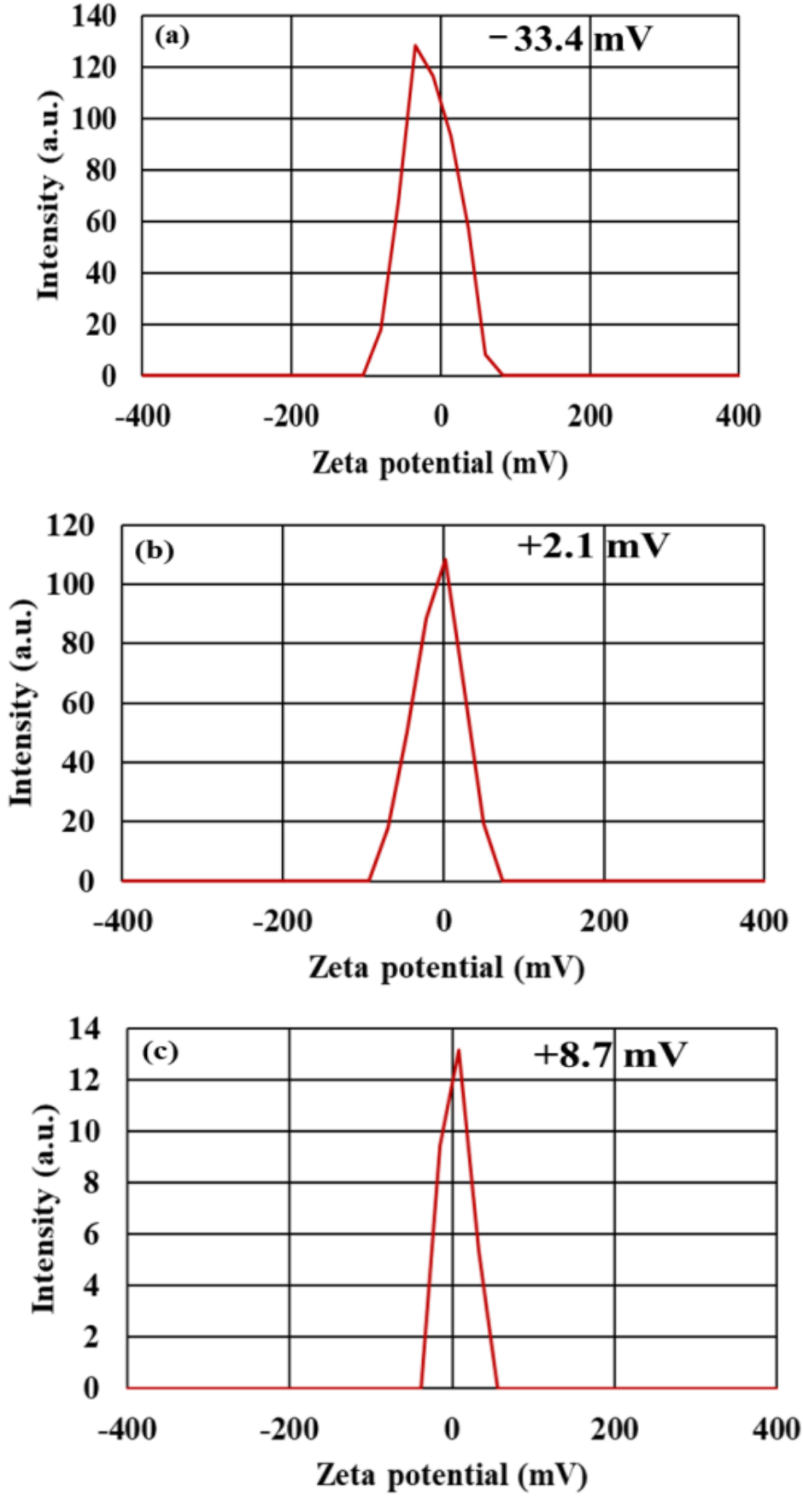

Figure S11. Zeta potential of (a) Mo-CDs, (b) MO-CDs with DLM, and (c) MO-CDs with FV.

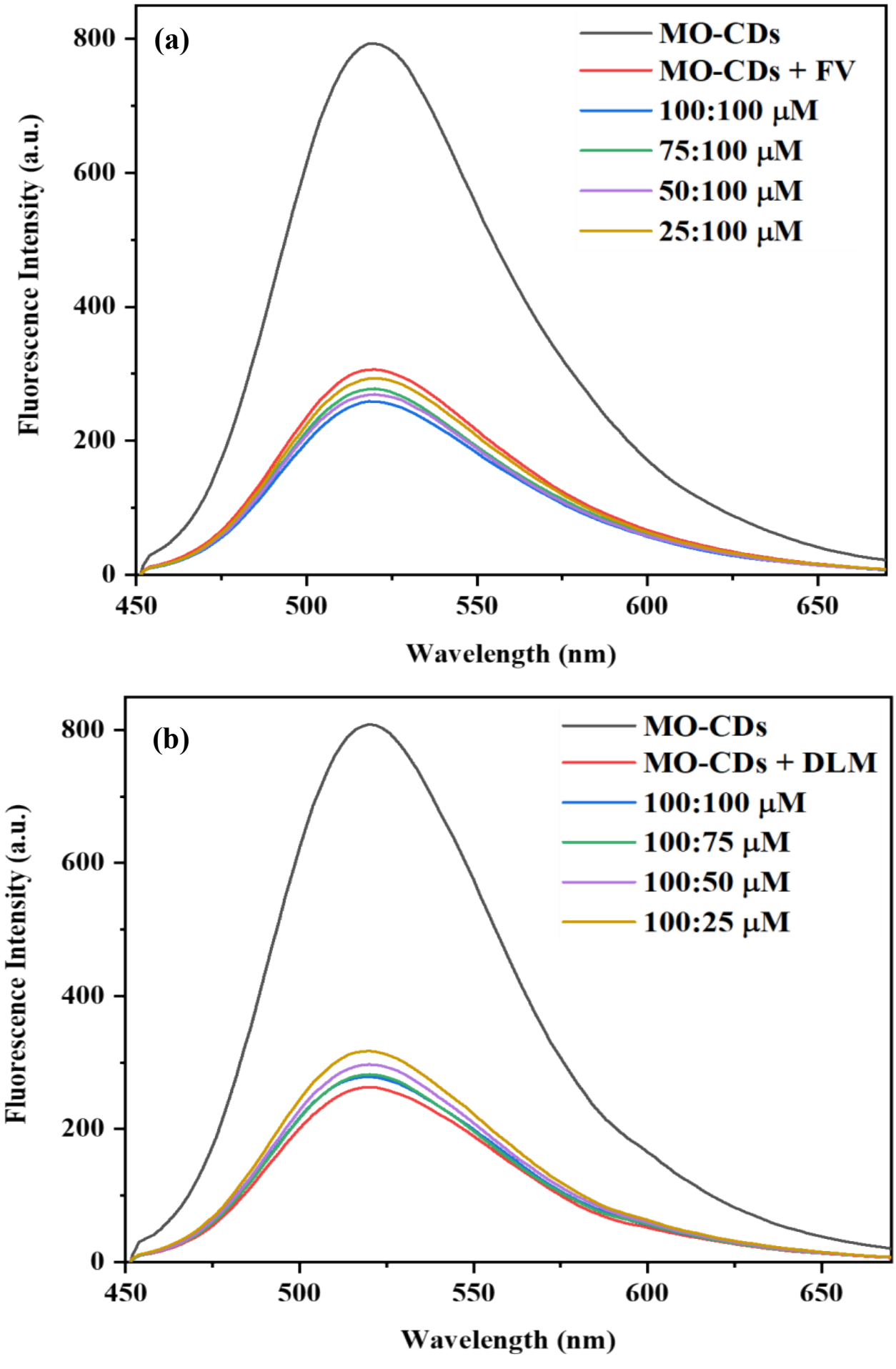

Figure S12. MO-CDs selectivity study in the existence of both insecticides at different concentrations of DLM: FV (a) 100:100, 75:100, 50:100, 25:100 µM and (b) 100:100, 100:75, 100:50, 100:25 µM, respectively.

Table S1. Determination of deltamethrin in vegetables and rice samples by using MO-CDs as fluorescent probe (n=3).

Sample	Added (μM)	Found (μM)	Recovery (%)	RSD (%)
Cabbage	0.1	0.097	97.11	0.06
	0.25	0.247	98.90	0.13
	0.5	0.492	98.53	0.12
	1.0	0.998	99.93	0.12
Corn	0.1	0.096	96.18	0.04
	0.25	0.249	99.70	0.10
	0.5	0.488	97.67	0.11
	1.0	0.987	98.73	0.07
Rice	0.1	0.098	98.64	0.10
	0.25	0.246	98.75	0.08
	0.5	0.491	98.23	0.06
	1.0	0.982	98.26	0.03

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Table S2. Determination of fenvalerate in vegetables and rice samples by using MO-CDs as fluorescent probe (n=3).

Sample	Added (μM)	Found (μM)	Recovery (%)	RSD (%)
Cabbage	0.5	0.494	98.87	0.07
	1.0	0.976	97.67	0.05
	2.5	2.445	97.76	0.05
	5.0	4.851	97.02	0.08
Corn	0.5	0.493	98.71	0.10
	1.0	0.955	95.50	0.09
	2.5	2.462	98.49	0.05
	5.0	4.926	98.52	0.09
Rice	0.5	0.485	97.10	0.06
	1.0	0.990	99.02	0.09
	2.5	2.442	97.71	0.08
	5.0	4.954	99.09	0.13

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