Electronic Supplementary Material (ESI) for Nanoscale.
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Supporting Information

Hydrophilic and blue fluorescent N-doped carbon dots from tartaric acid and various alkylol amines under microwave irradiation

Minghan Xu,[a] Shusheng Xu,[a] Zhi Yang*[a], Mengjun Shu,[a] Guili He,[a] Da Huang,[a] Liling Zhang,[a] Li Li*[b], Daxiang Cui[a] and Yafei Zhang*[a]

[a]Key Laboratory for Thin Film and Microfabrication of Ministry of Education, Department of Micro/Nano Electronics, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, P. R. China. E-mail: zhiyang@sjtu.edu.cn; yfzhang@sjtu.edu.cn; Tel.:+86-21-34206398; Fax: +86-21-34205665

[b]School of Chemistry and Molecular Engineering, East China Normal University, Shanghai 200241, P. R. China. E-mail: lli@chem.ecnu.edu.cn

Supplementary Figures

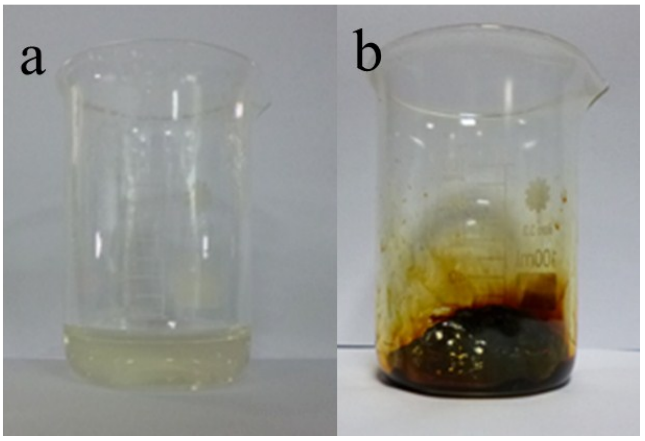

Fig. S1 (a) The reaction solution with tartaric acid and MEA before microwave irradiation; (b) the obtained viscous solid after microwave irradiation.

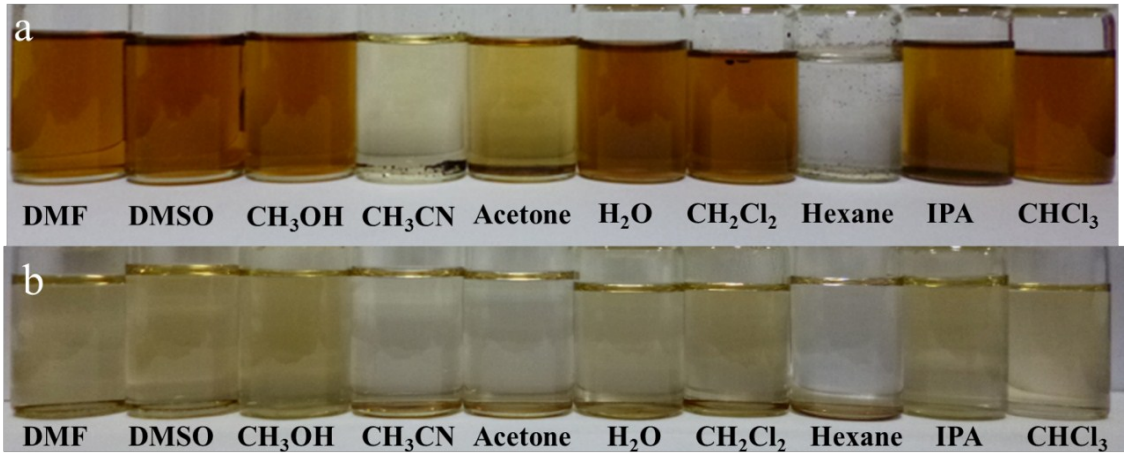

Fig. S2 The photos of (a) M-CDs2 (2 mg) and (b) M-CDs3 (2 mg) dissolved in different solvents (8 mL). (from left to right: dimethyl formamide, dimethylsulfoxide, methanol, acetonitrile, acetone, DI water, dichloromethane, hexane, isopropanol, and trichloromethane).

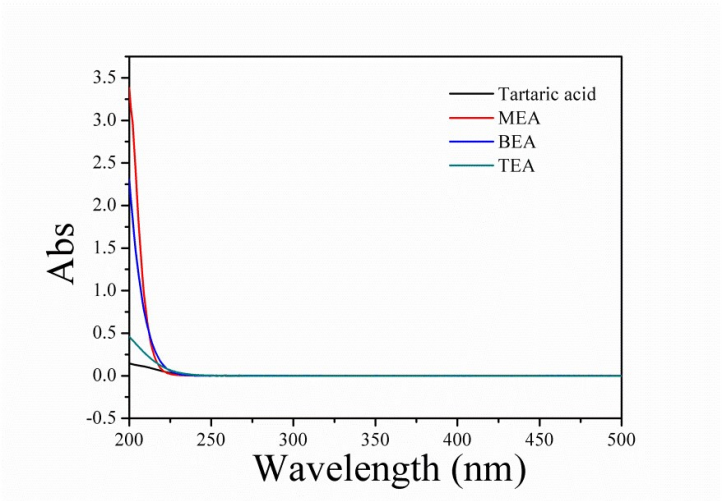

Fig. S3 UV-Vis spectra of tartaric acid, MEA, BEA and TEA.

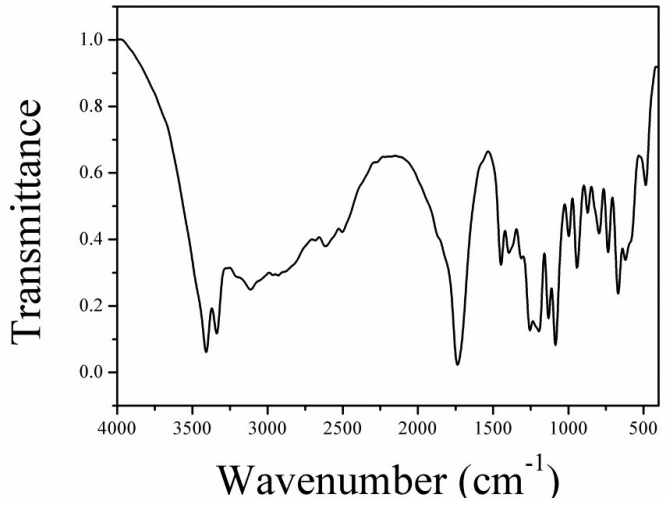

Fig. S4 FT-IR spectrum of the reactant tartaric acid.

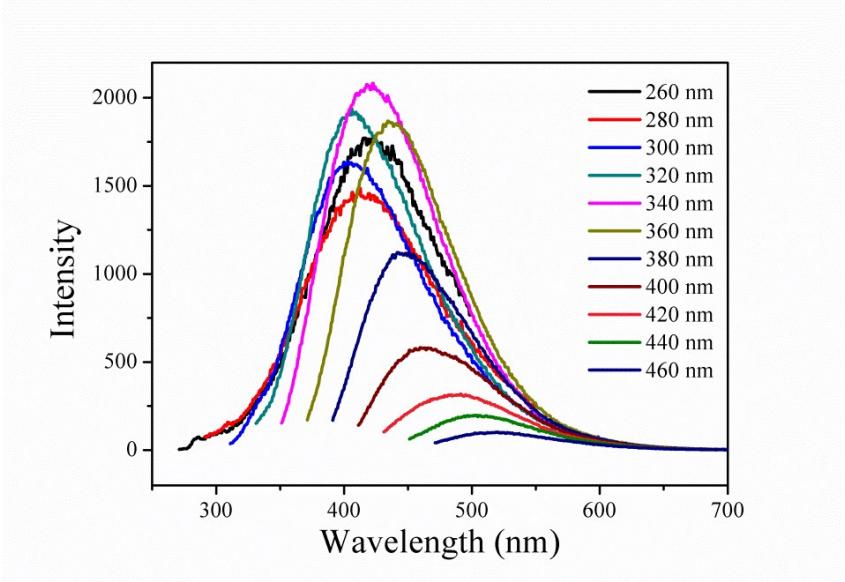

Fig. S5 PL spectra of M-CDs2 at excitation from 260 nm to 460 nm with 20 nm increment.

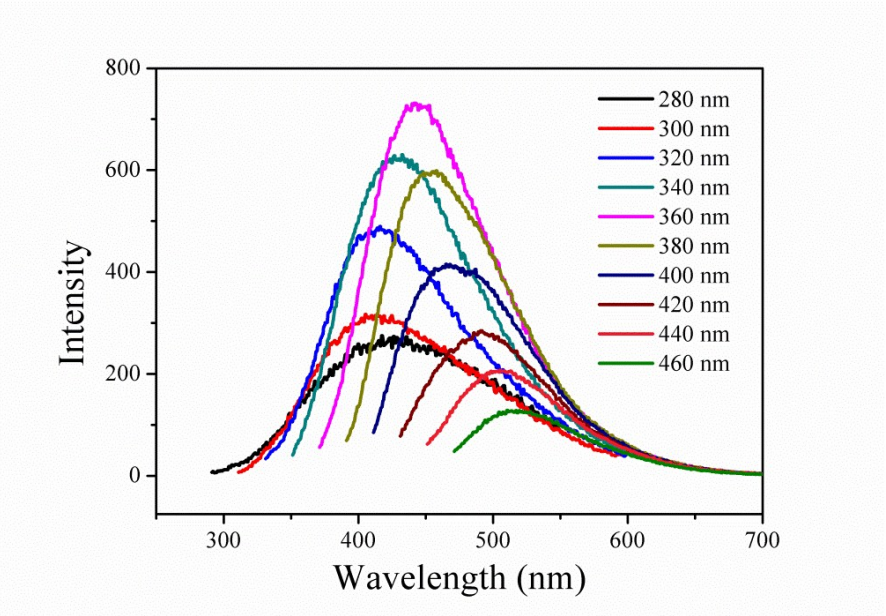

Fig. S6 PL spectra of M-CDs3 at excitation from 280 nm to 460 nm with 20 nm increment.

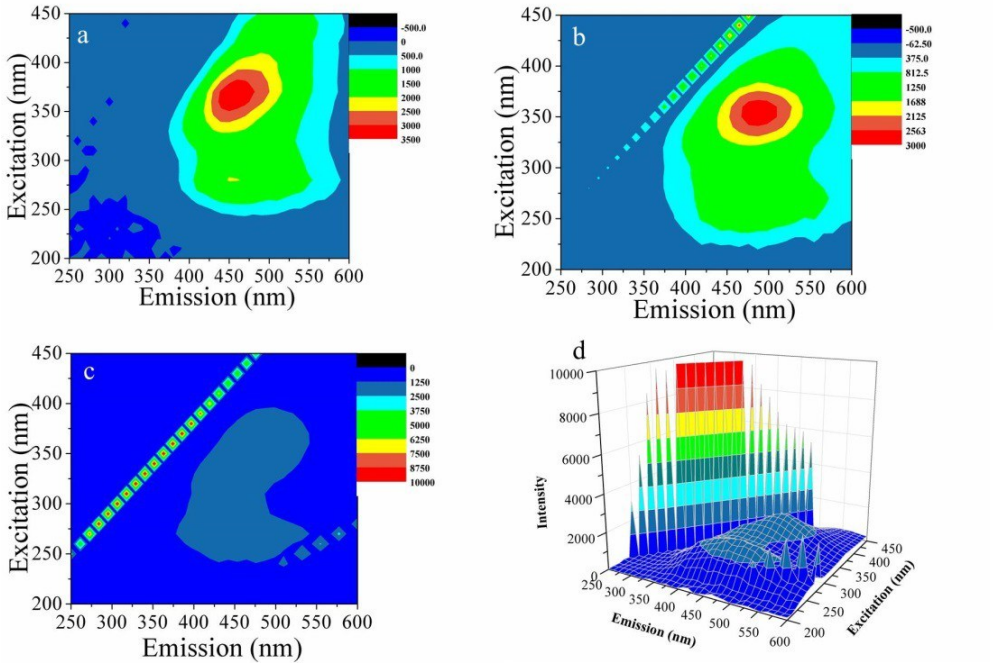

Fig. S7 (a-c) 2D-PL of M-CDs1, M-CDs2 and M-CDs3, respectively; (d) 3D-PL topographical map of M-CDs3.

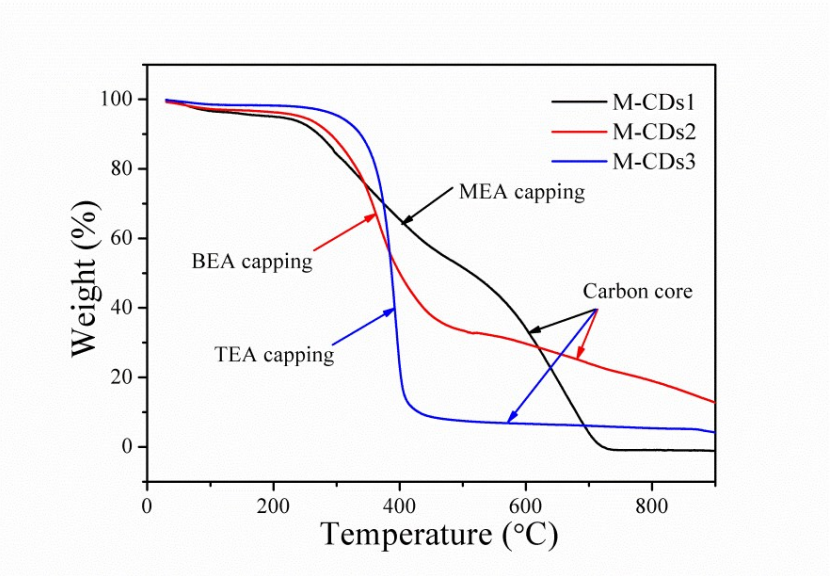

Fig. S8 TGA curves of M-CDs1, M-CDs2 and M-CDs3, respectively.

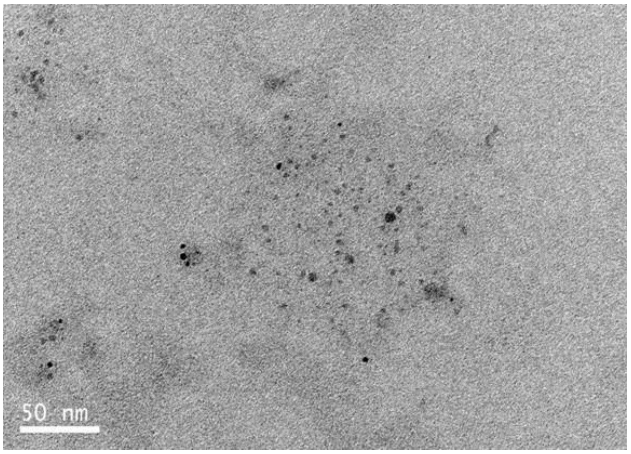

Fig. S9 TEM images of M-CDs1.

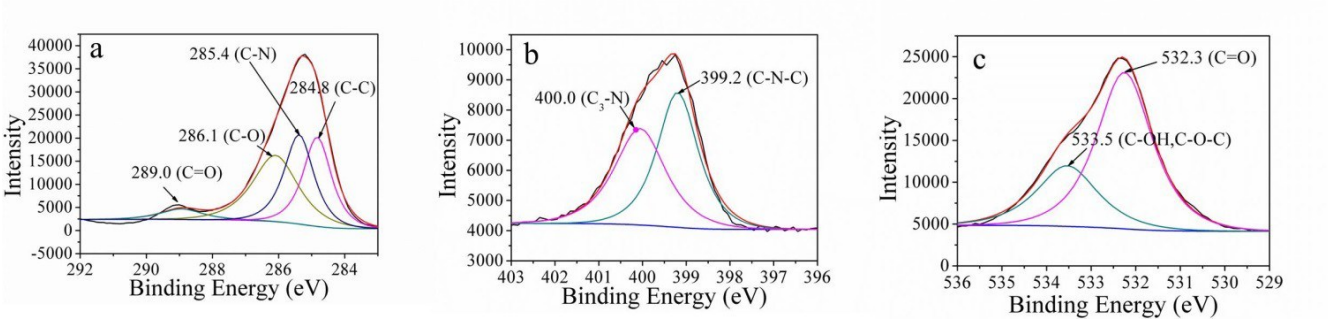

Fig. S10 (a) The high-resolution C 1s spectrum of M-CDs2; (b) the high-resolution N 1s spectrum of M-CDs2; (c) the high-resolution O 1s spectrum of M-CDs2.

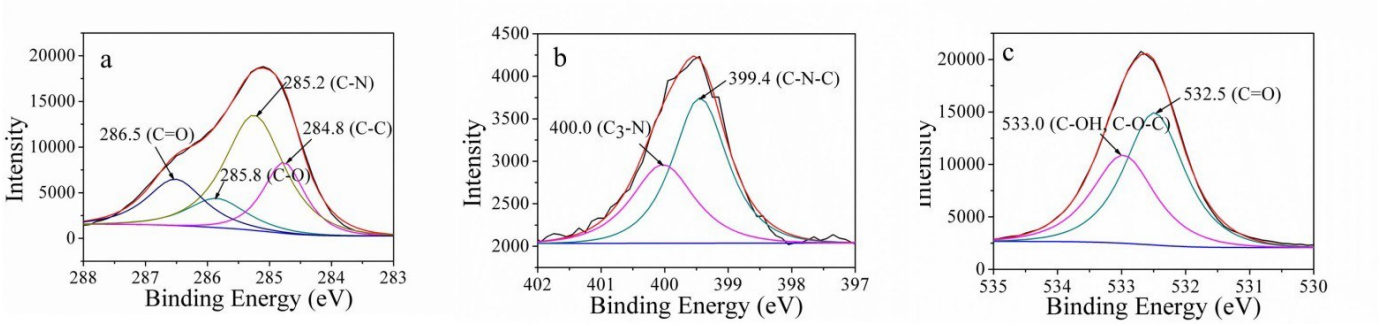

Fig. S11 (a) The high-resolution C 1s spectrum of M-CDs3; (b) the high-resolution N 1s spectrum of M-CDs3; (c) the high-resolution O 1s spectrum of M-CDs3.

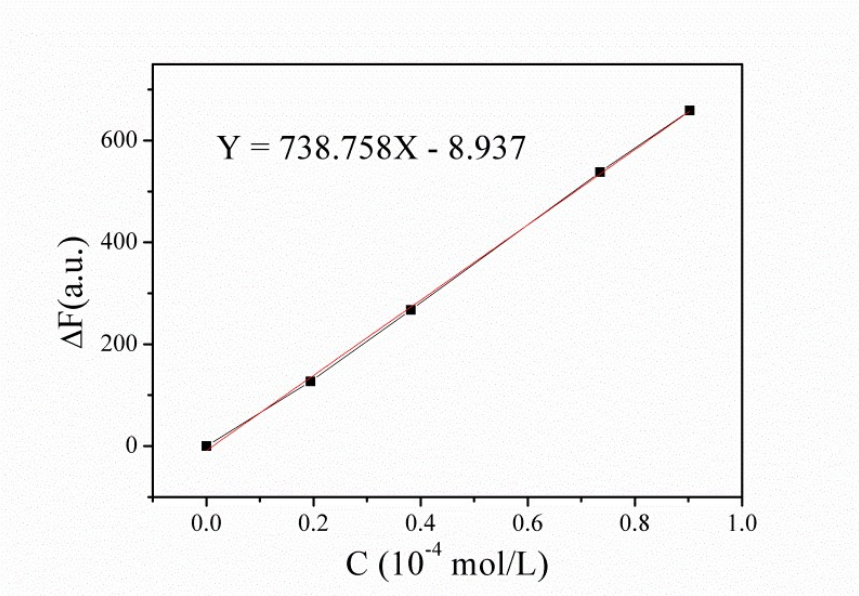

Fig. S12 Plot of absolute change of the fluorescence intensity of M-CDs1 versus the concentration of Fe^{3+}.

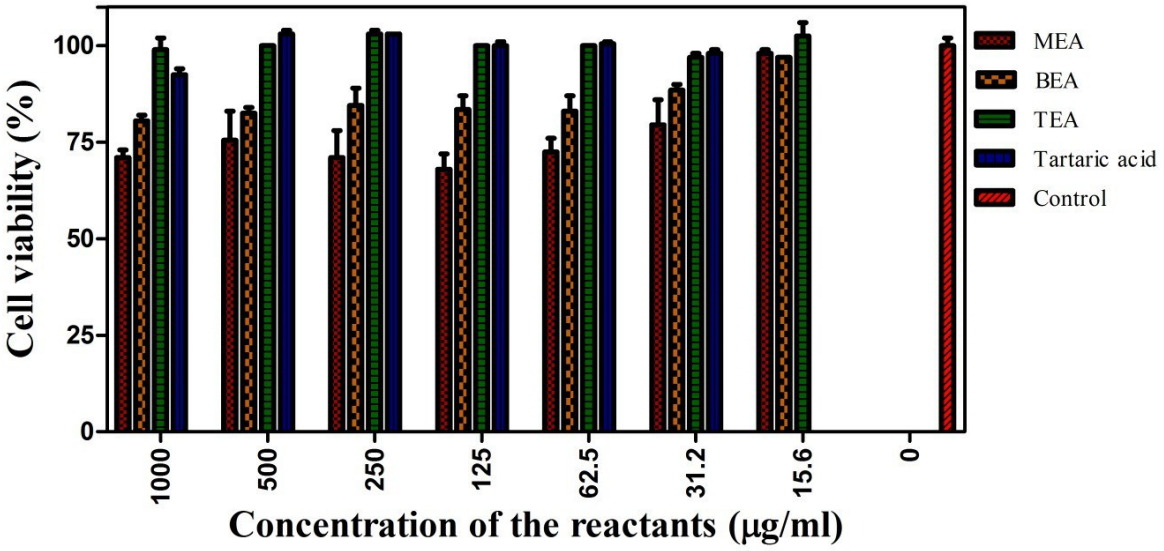

Fig. S13 Cell toxicities of the four reactants (MEA, BEA, TEA and tartaric acid).

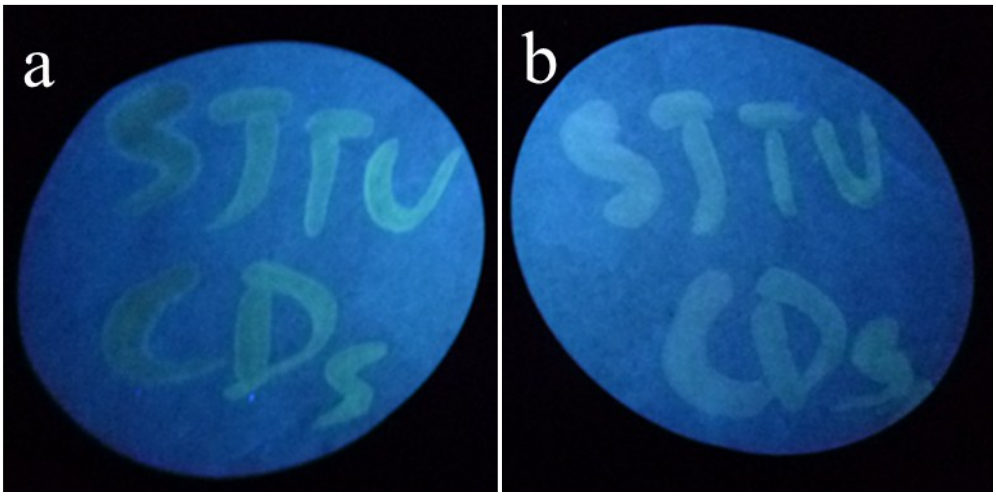

Fig. S14 The calligraphy in (a) M-CDs2-based and (b) M-CDs3-based fluorescent ink.

Supplementary Tables

Table S1. The detailed quantum yields information of M-CDs.

Sample	Excitation Wavelength (nm)	A	I	QY (%)
Quinine sulfate	340	0.07066	145330	54.0
	360	0.06041	122072	54.0
M-CDs1	340	0.02132	5062	6.2
	360	0.01904	4541	6.4
M-CDs2	340	0.03978	8676	5.7
	360	0.02655	5566	5.7
M-CDs3	340	0.03202	2228	1.8
	360	0.02530	1646	1.8

Table S2. The detailed XPS information of M-CDs.

Sample	Name	Position	FWHM	Area/(T*MFP)	Atomic Concentration (%)	Mass Concentration (%)
M-CDs1	N 1s	397.95	1.7955	4597.75	9.26	10.09
	C 1s	283.50	2.5933	20478.01	74.26	69.40
	O 1s	530.00	2.1687	13313.23	16.48	20.51
M-CDs2	N 1s	396.75	1.8589	2412.76	5.60	6.18
	C 1s	282.70	1.8839	19226.01	80.25	75.98
	O 1s	529.90	2.1521	9934.45	14.15	17.85
M-CDs3	N 1s	396.75	1.2970	617.60	3.14	3.43
	C 1s	282.40	1.9079	8516.82	77.96	73.00
	O 1s	530.00	1.3542	6049.84	18.90	23.57