

Electronic supplementary information

Application of Magnesium Ion Doped Carbon Dots

Obtained via Hydrothermal Synthesis for Arginine

Detection

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Table S1. Quantum yield of Mg-CDs using quinine sulfate in sulfuric acid as a reference

Sample	Integrated emission intensity (<i>I</i>)	Abs. at 350 nm (<i>A</i>)	Refractive index of solvent (η)	Quantum Yield (ϕ)
Quinine sulfate	98034.80	0.007	1	56.00%
Mg-CDs	87330.42	0.013	1	26.86%

Table S2. Comparison of different methods for determining arginine

Probe material	Methods	Linear range	Detection limit	Reference
ZnLTP-AgNPs	UV-vis	0.1–12 $\mu\text{mol/L}$	200 nmol L	1
Urease/glutaraldehyde	Electrochemistry	0.1–2 mmol/L	50 $\mu\text{mol/L}$	2
Rhodamine-thiourea/ Al^{3+}	Fluorescence	0–120 $\mu\text{mol/L}$	2.3 $\mu\text{mol/L}$	3
ZnS quantum dots	Fluorescence	10^{-4} –1.0 mol/L	10 $\mu\text{mol/L}$	4
Plumbagin	Fluorescence	1–100 $\mu\text{mol/L}$	1 $\mu\text{mol/L}$	5
Zn^{2+} terpyridine complex	Fluorescence	0–0.1 mmol/L	15 nmol/L	6
Mg-CDs	Fluorescence	0.3–130 $\mu\text{mol/L}$	0.15 $\mu\text{mol/L}$	This work

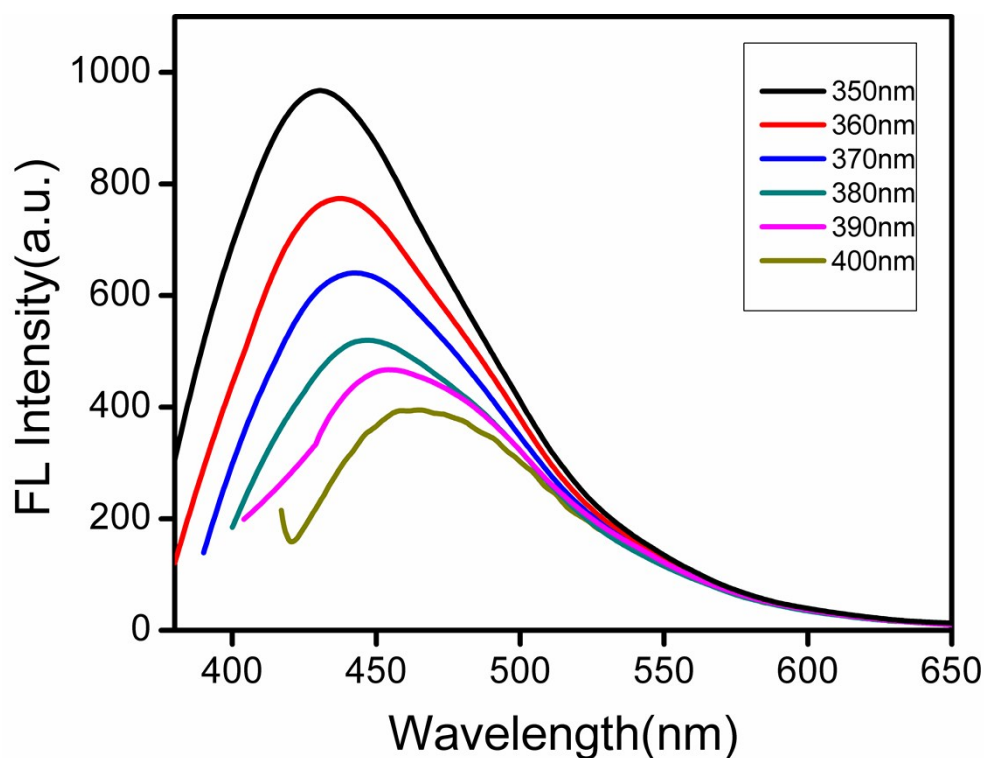


Fig. S1 Fluorescence intensity of the Mg-CDs obtained at different excitation wavelengths.

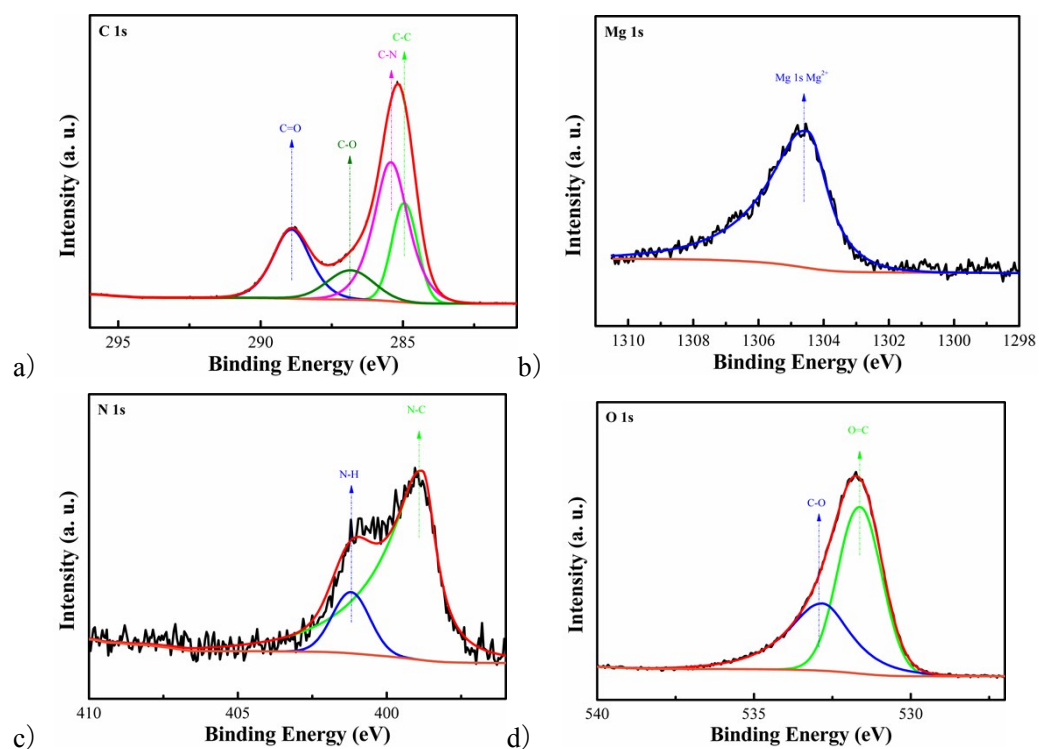


Fig. S2 a) The C 1s XPS spectrum of the Mg-CDs, b) The Mg 1s XPS spectrum of the Mg-CDs, c) The N 1s XPS spectrum of the Mg-CDs, d) The O 1s XPS spectrum of the Mg-CDs.

References

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