Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting Information

Bioinspired carbon dots: From Rose petals to tunable emissive nanodots

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Materials & Instrumentation

Rose flowers (*Rosa indica*) were purchased from local market. Ethylenediamine, l-cysteine and dimethyl sulfoxide-d_6 was procured from Sigma Aldrich. Chemicals were used without further purification. Deionized water from Sartorius Milli-Q system was used throughout the study. The PXRD was performed on Rigaku Smart Lab X-ray diffractometer having CuK_α radiation of 1.54 Å. The UV-visible was carried out using Varian Cary 100 Bio UV-visible spectrophotometer. The XPS was performed on AXIS ULTRA. Thermo-Flash 2000 elemental analyzer was used for elemental analysis. The TEM and HR-TEM studies were performed on a FEI Tecnai G2 F20 Transmission electron microscope. A Bruker-Daltonics micro TOF-QII mass spectrometer was used for mass analysis. The fluorescence measurements were performed on Fluoromax spectrofluorometer.

NMR studies

The 1D (^1H & ^{13}C) and 2D ($^1H/^{13}C$) heteronuclear multiple bond correlation (HMBC) & ($^1H/^1H$) homonuclear correlation spectroscopy (COSY) NMR spectra were recorded after dissolving ca. 25±0.02 mg of RE, NSR-1h/2h/3h/4h and **N-S@RCD** samples in 600 µL dimethyl sulfoxide-d_6. The 400.13 MHz frequency Bruker Avance- 400 NMR instrument was used for NMR spectra at 25±2 ^oC in dimethyl sulfoxide-d_6 and the reference proton and carbon peaks are considered at 2.50 and 39.50 ppm respectively.

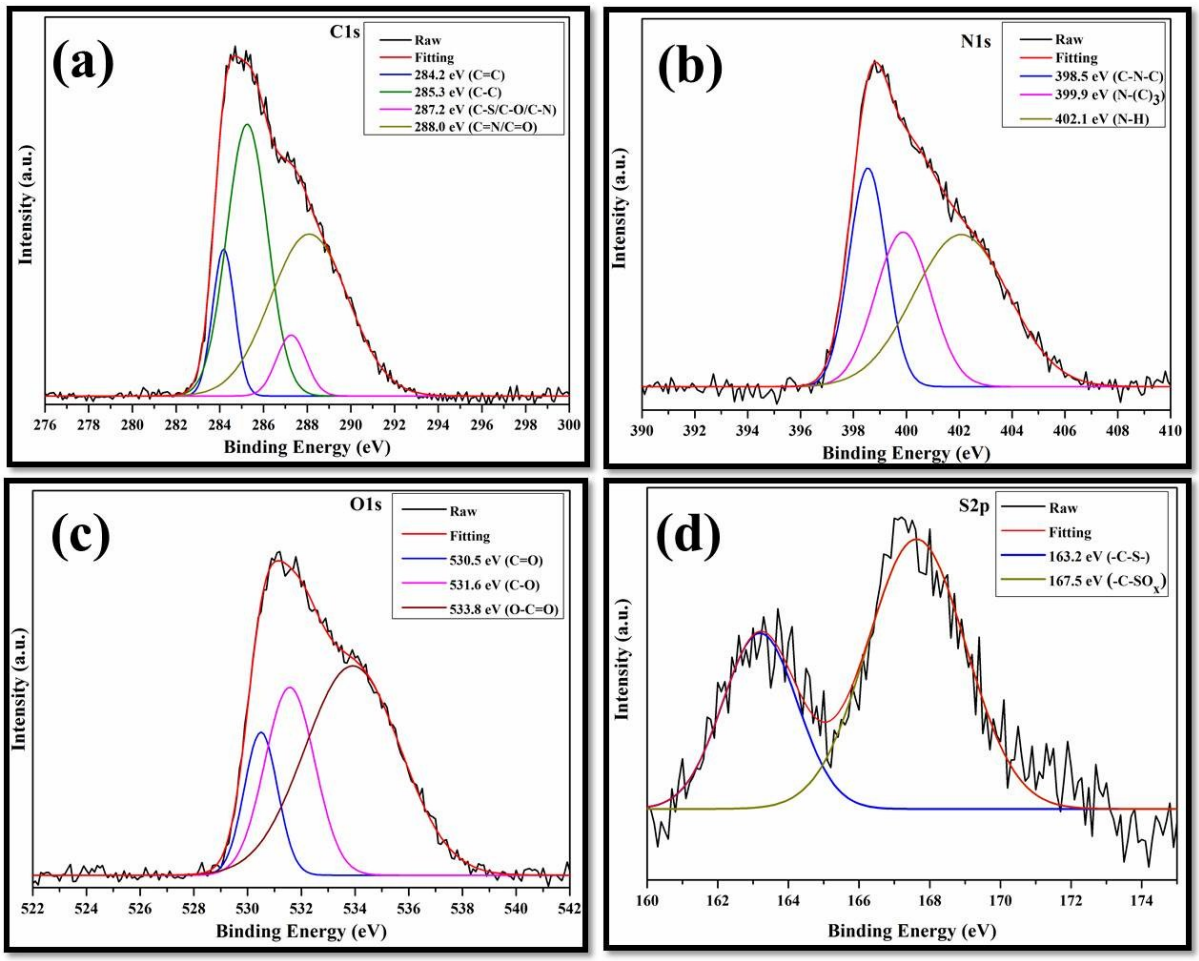

Fig. S1. High resolution XPS spectra of **N-S@RCD:** (a) C1s, (b) N1s, (c) O1s and (d) S2p.

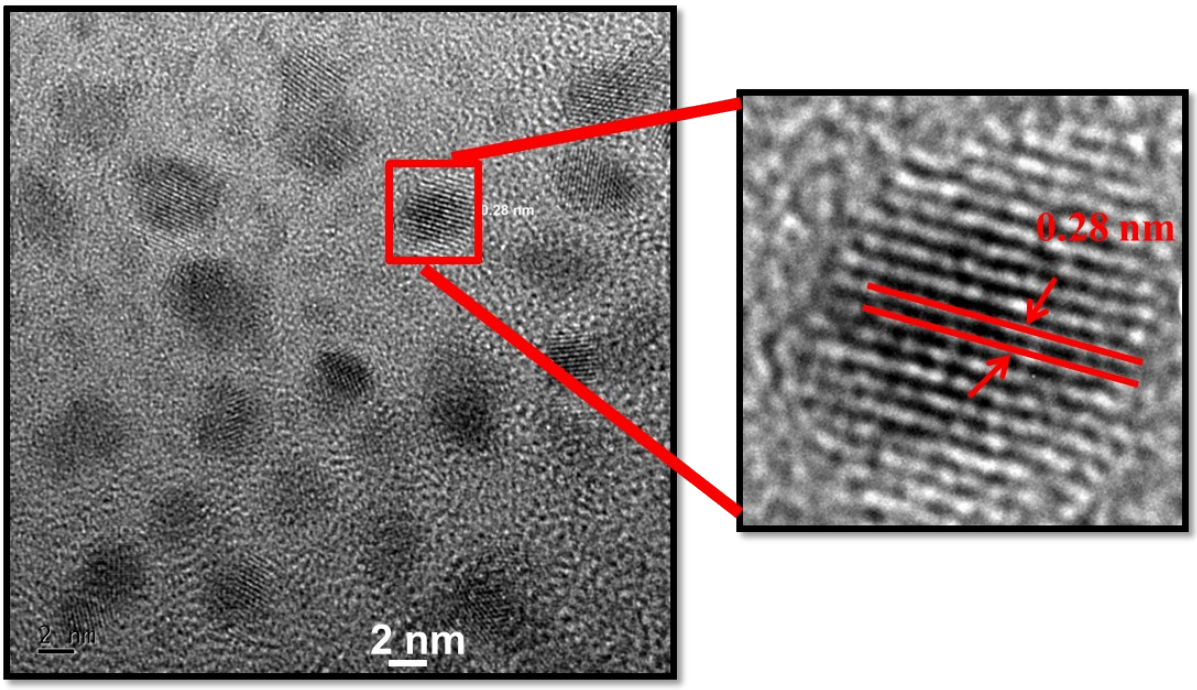

Fig. S2. High resolution TEM (HR-TEM) of **N-S@RCD.**

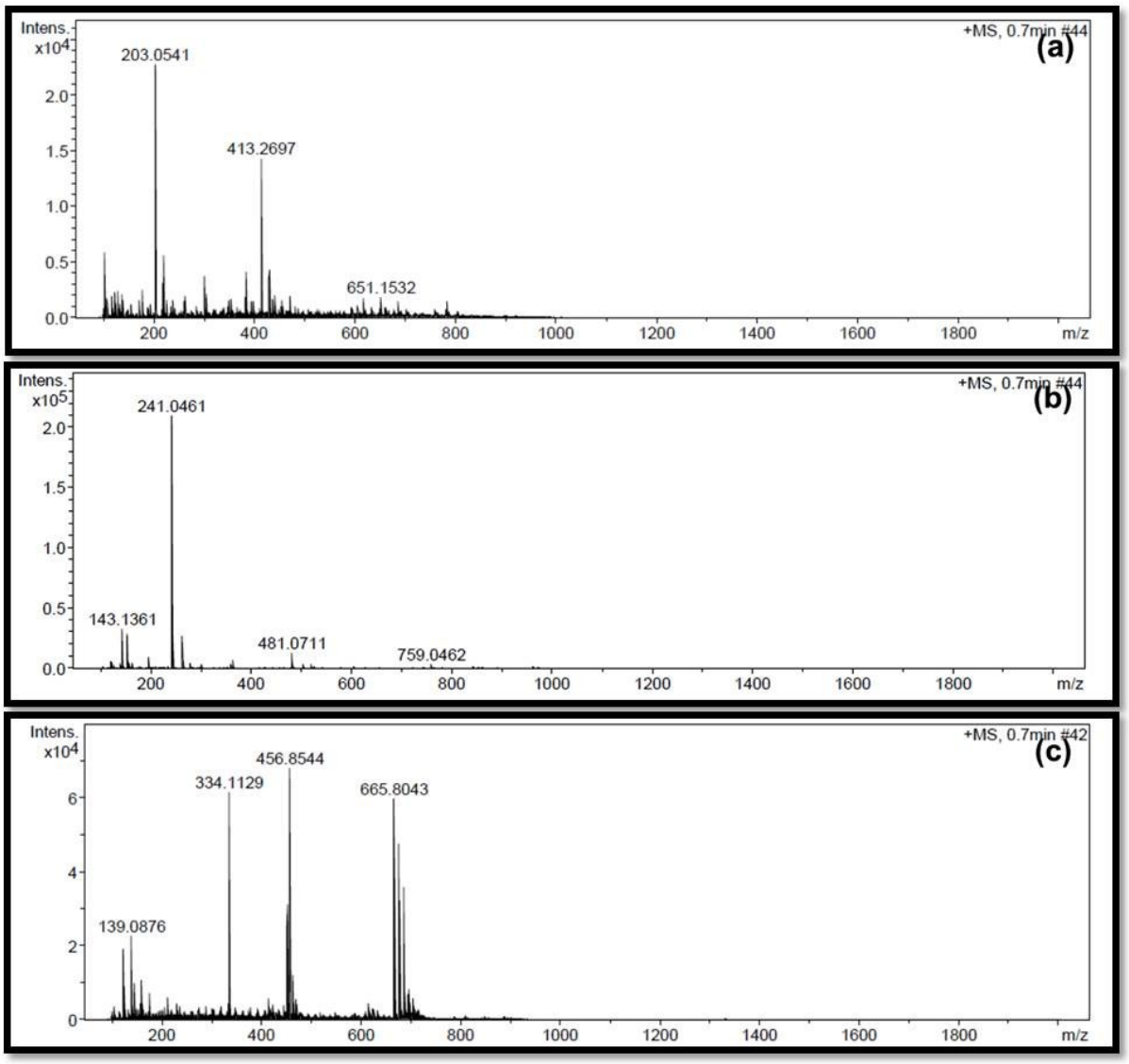

Fig. S3. LC-MS chromatogram of (a) RE, (b) RE-I and (c) **N-S@RCD**. The chromatograms were recorded using positive mode.

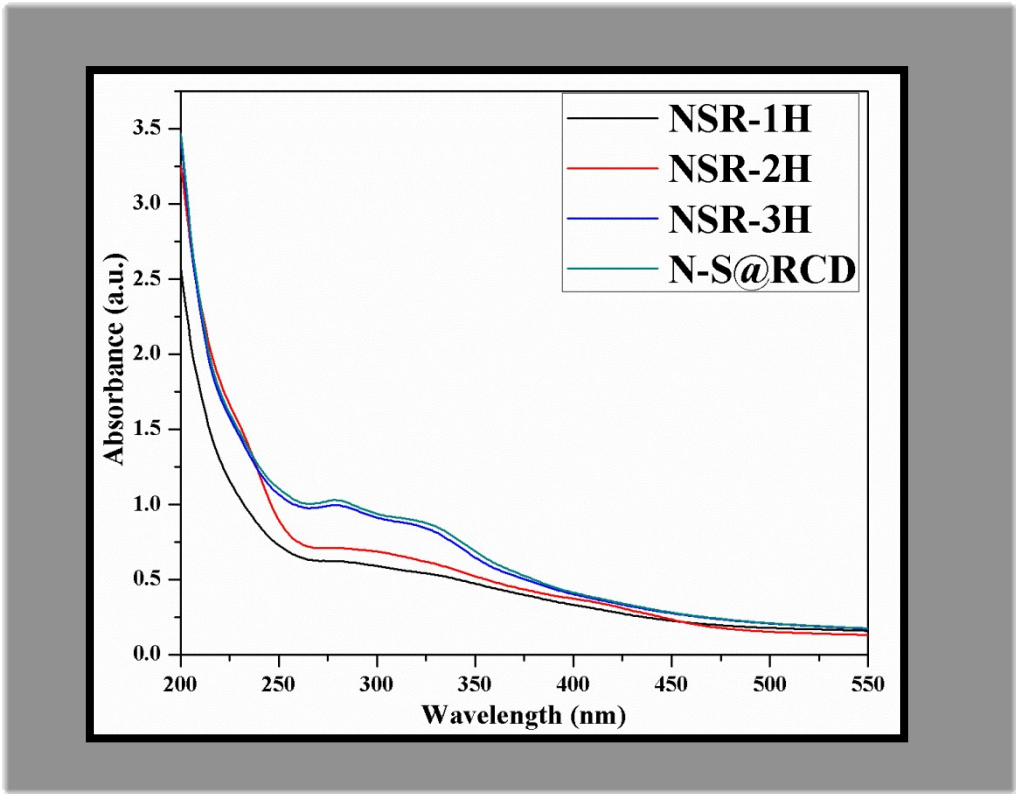

Fig. S4. Change in UV-Vis spectrum for NSR-1h to **N-S@RCD**.

Table S1. Elemental analysis of RE, RE-I and **N-S@RCD** samples

Element	**Atomic Percentage**		
	RE	RE-I	**N-S@RCD**
Carbon	37.58	32.70	42.20
Hydrogen	5.49	9.17	2.39
Nitrogen	3.33	22.27	14.52
Sulfur	-	7.63	4.80
Oxygen*	53.60	28.23	36.09
C/N ratio	10.08	1.47	2.91
C/S ratio	0	4.29	8.79
*calculated based on C, H, N & S analysis by using oxygen (%) = 100- (carbon %+ hydrogen% + nitrogen% + sulfur%)			

Table S2. Green precursor derived carbon dots and respective QY

S. No.	Green Source	Quantum Yield (%)	Ref
1	Mango	0.48-3.92	1
2	Chicken egg	6-8	2
3	Waste Frying oil	3.66	3
4	Soy milk	2.6	4
5	Coffee grounds	3.8	5
6	Rose petals	9.6	This work

References

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