

# **N-doped carbon dots derived from melamine and triethanolamine for selective sensing of Fe<sup>3+</sup> ions**

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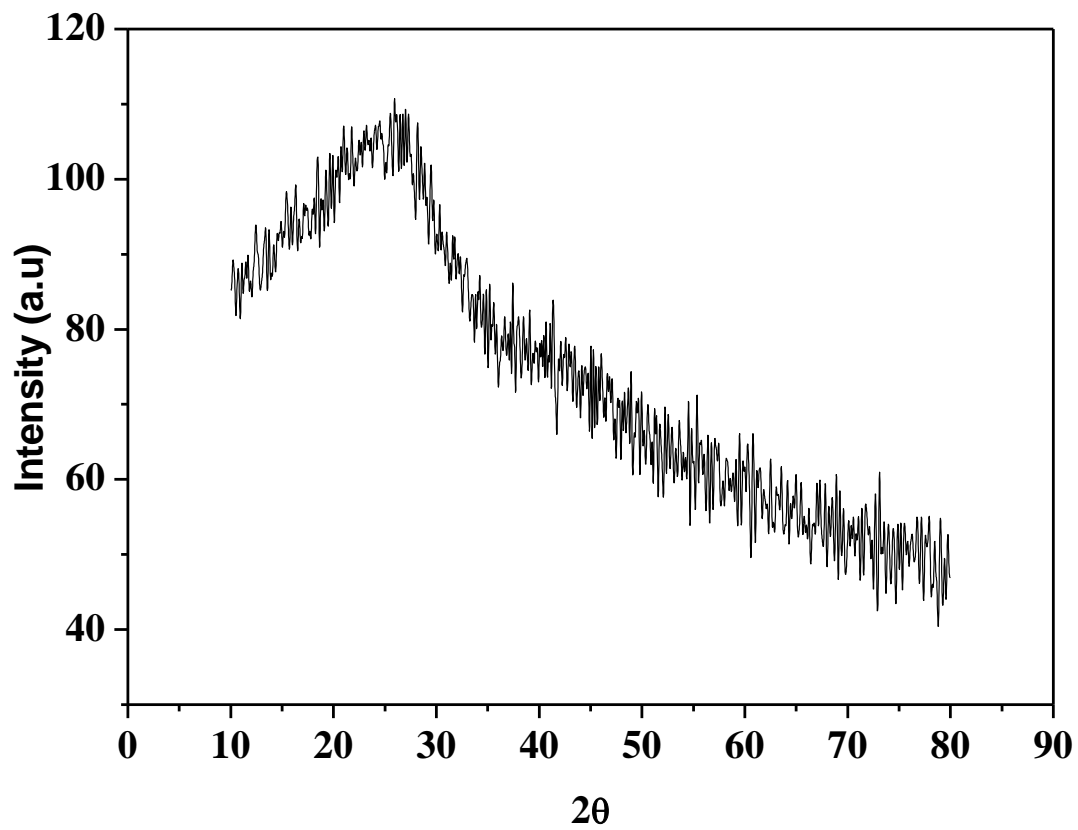
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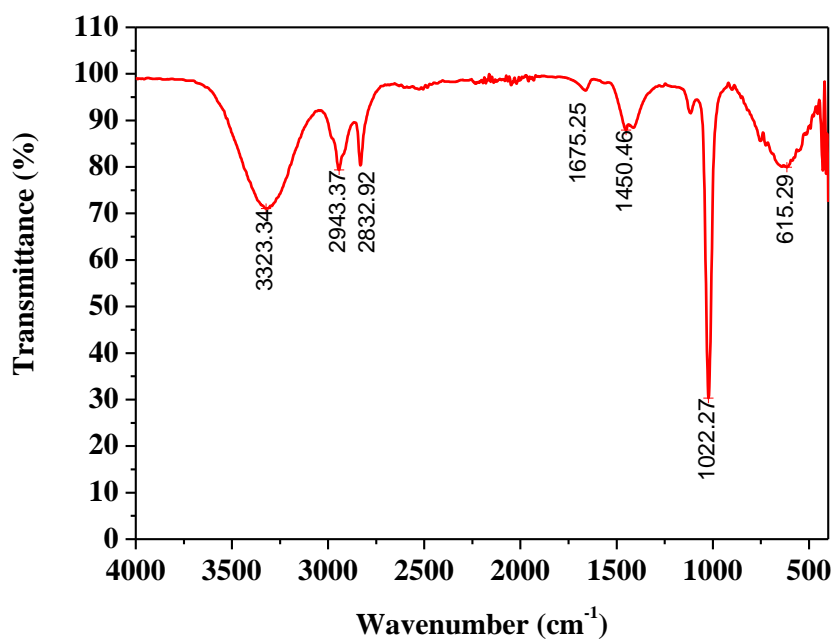
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**Figure S1: X-ray diffraction patterns of as prepared NCDs.**



**Figure S2.** FT-IR spectrum of as synthesized NCDs.

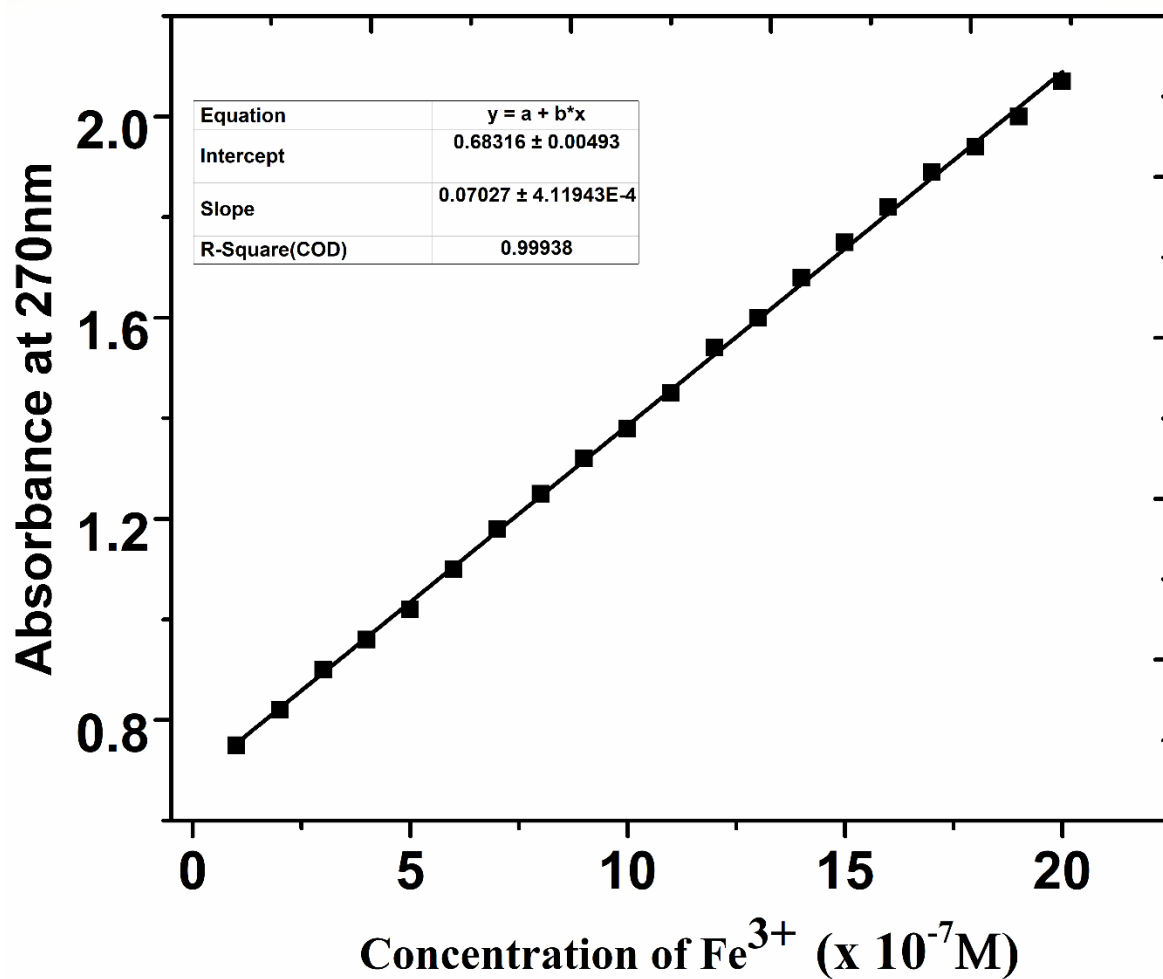
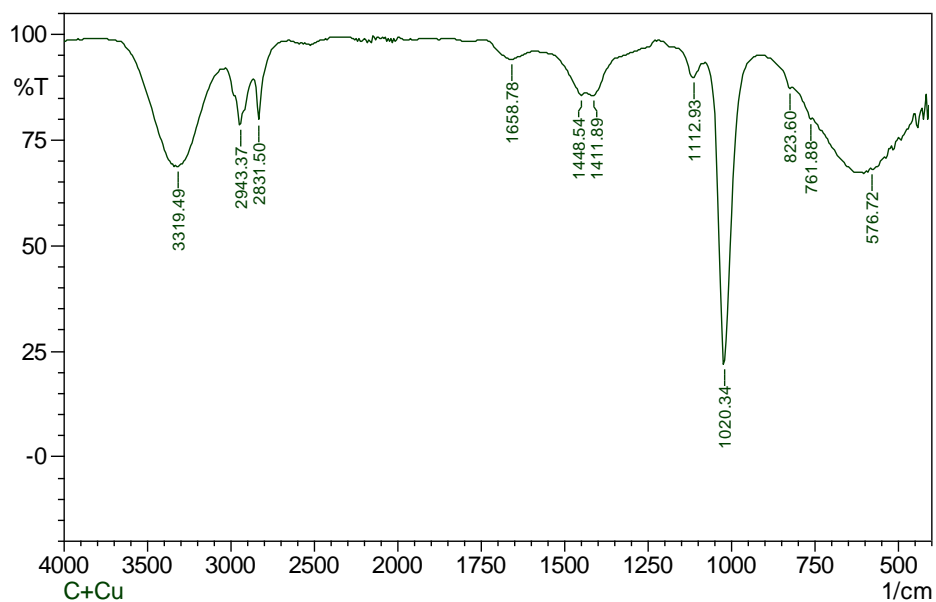
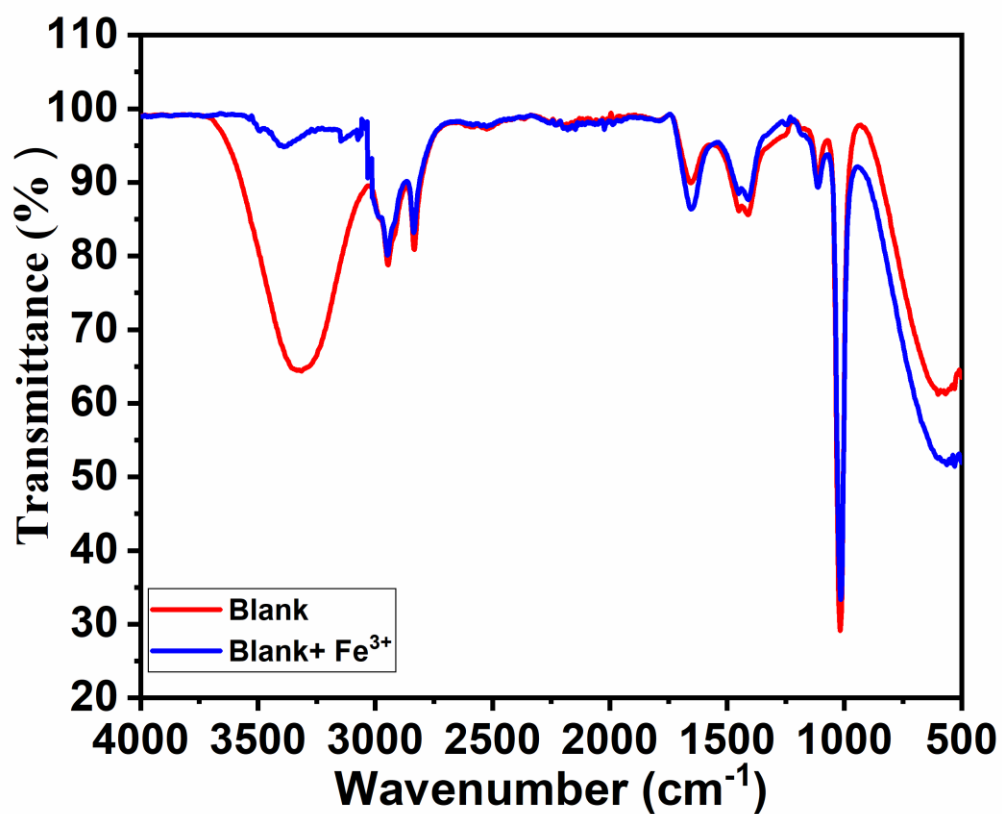


Figure S3. Absorption changes at 270nm with increasing concentration of Fe<sup>3+</sup>.



**Figure S4:** FT-IR spectra of NCDs with  $\text{Fe}^{3+}$  and  $\text{Cu}^{2+}$

**Table S1.** Comparison of LOD of Fe<sup>3+</sup> detection reported in recent papers based on chemosensors and nanomaterials.

S.No	Reported Probe	LOD	Reference
1	Salicylaldehyde based Schiff base	0.163 & 3.99 $\mu$ M	Mater. Chem. Front., 2020,4, 1471-1482
2	N-doped carbon dots	42 nm	Analyst, 2020,145, 5450-5457
3	N-doped carbon dots	0.18 $\mu$ M	Analyst, 2020,145, 4931-4936
4	Triazole Based	82 & 93 $\mu$ M	Asian J. Org. Chem. 2020, 9, 1081
5	Glycoluril based	30 $\mu$ M	ChemistrySelect 2020, 5, 1878
6	Benzothiazolo-Pyrimidine-Based	0.16 $\mu$ M	ChemistrySelect 2019, 4, 4185
7	NCQDs prepared from tartaric acid and L-arginine.	0.5 $\mu$ M	Microchemical Journal, 2020,158, 105142
8	Carbon quantum dots from pine wood	355.4 nM	Journal of Cleaner Production, 2020, 263, 121561
9	N and S co-doped carbon dots	300 nM	Materials Science and Engineering: C, 2019, 99, 611-619
10	Carbon quantum dots from Mexican Mint	0.53 $\mu$ M	Environmental Research, 2021, 111263 In Press. <a href="https://doi.org/10.1016/j.envres.2021.111263">https://doi.org/10.1016/j.envres.2021.111263</a>
11	Carbon quantum dots	5.23 $\mu$ M	Inorganic Chemistry Communications, 2021, 130, 108636
12	Carbon quantum dots from phenylalanine and citric acid	0.72 $\mu$ M	Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 2020, 229, 117944
13	Carbon dots from seville orange	0.53 $\mu$ M	Microchemical Journal, 2020, 159, 105357
14	Terbium metal-organic framework	0.936 $\mu$ M	Journal of Solid State Chemistry, 2021, 294, 121835
<b>15</b>	<b>NCDs</b>	<b>216 nM</b>	<b>This work</b>