

# Supporting Information for:

## **g-C<sub>3</sub>N<sub>4</sub>-Mediated Synthesis of Cu<sub>2</sub>O To Obtain Porous Composites with Improved Visible Light Photocatalytic Degradation of Organic Dyes**

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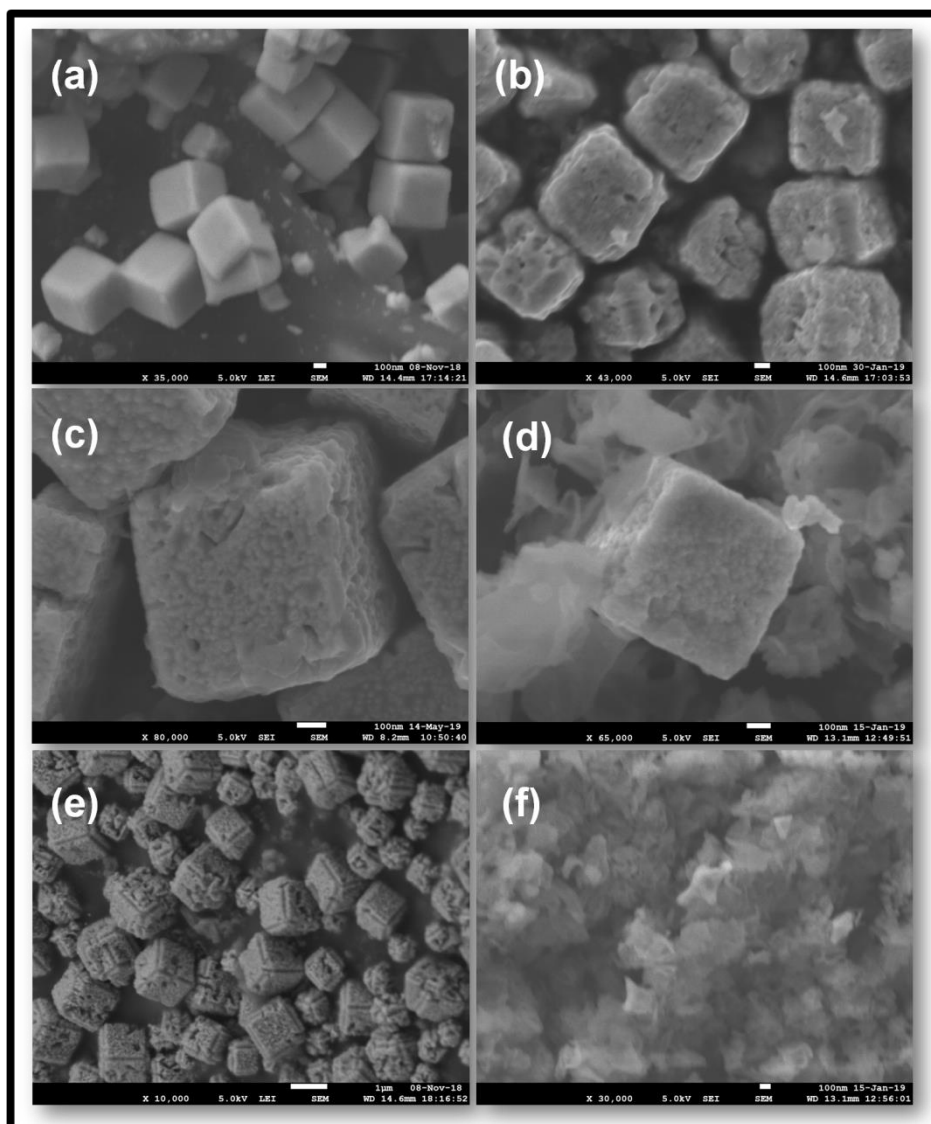
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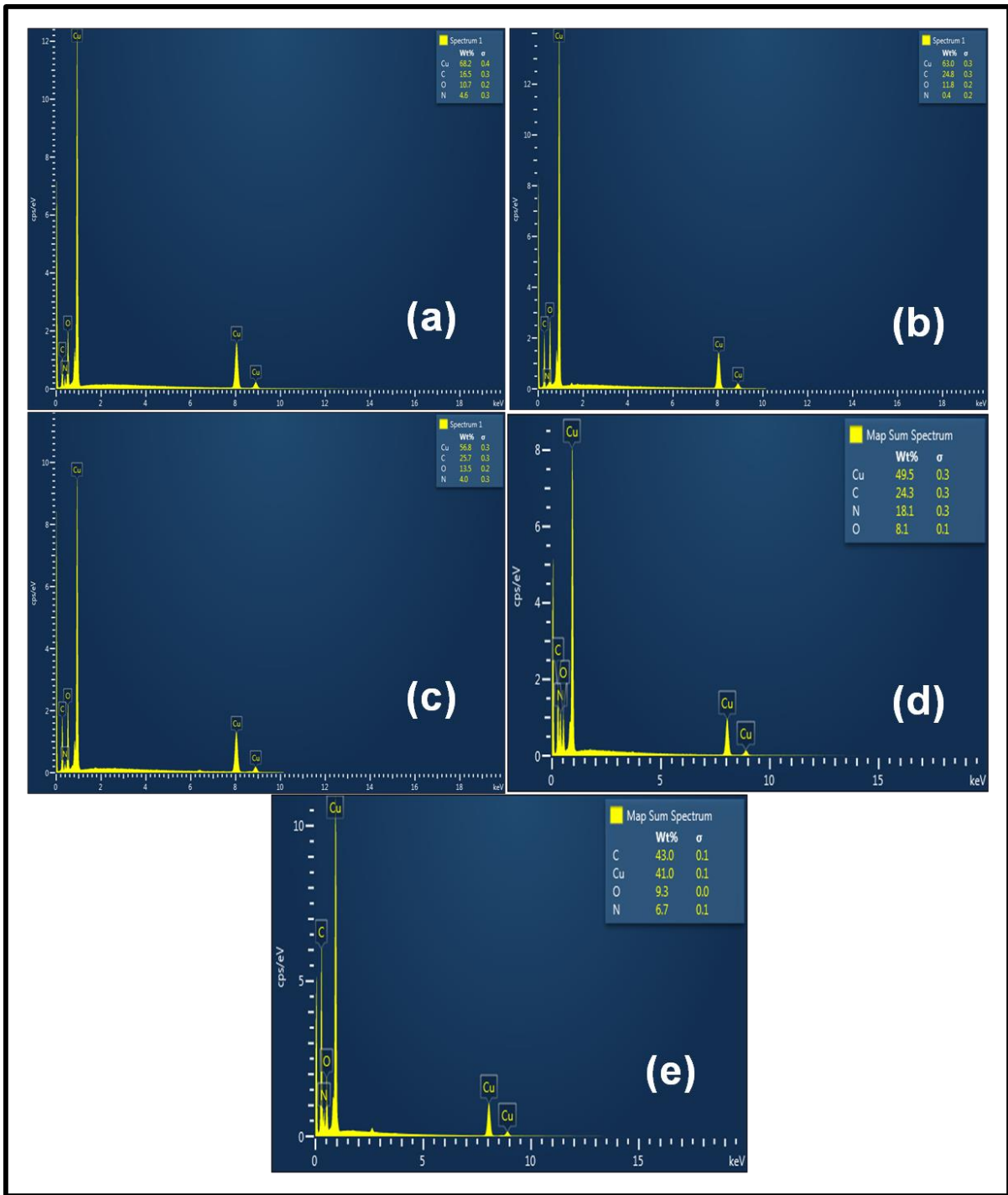
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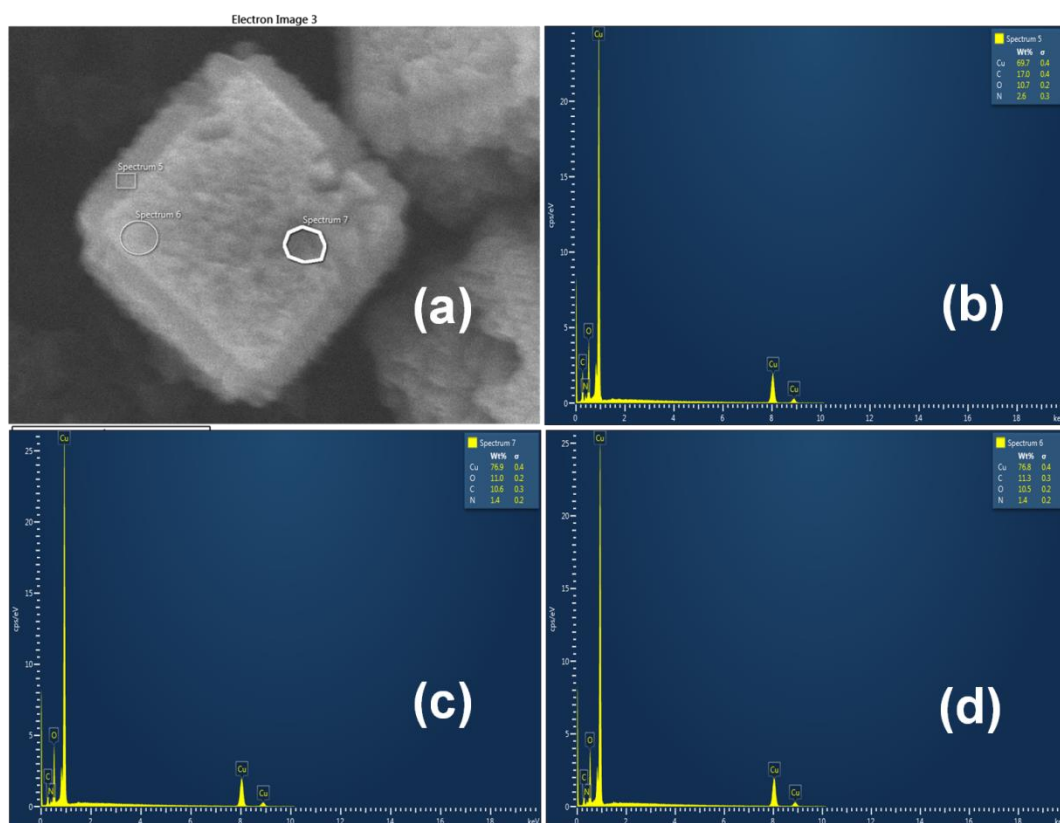
**Figure S1:** Pictorial representation of reaction with the sequence of color changes for the formation of  $g\text{-C}_3\text{N}_4/\text{Cu}_2\text{O}$  composite.



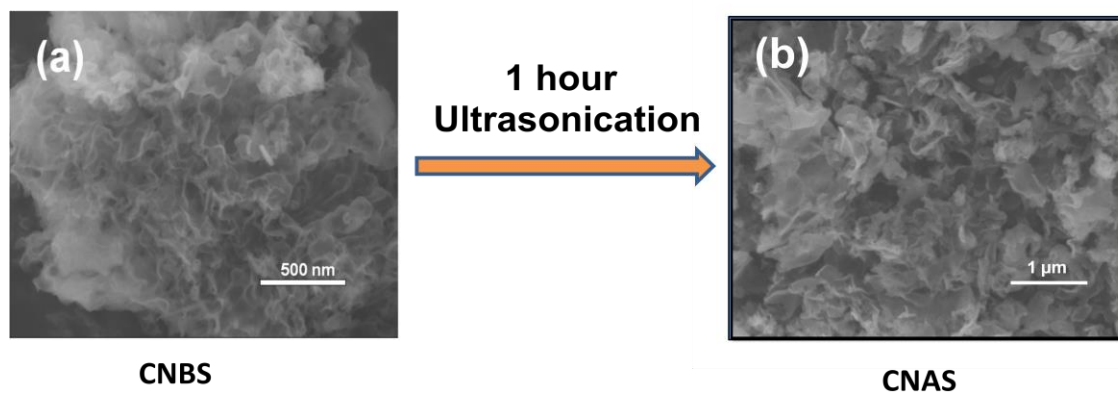
**Figure S2:** FE-SEM images of as synthesized (a) CN/Cu-1 (b) Cu-CN-2 (c) CN/Cu-3 (d) CN/Cu-4 (e) CN/Cu-5 and (f) CN/Cu-6 composites.



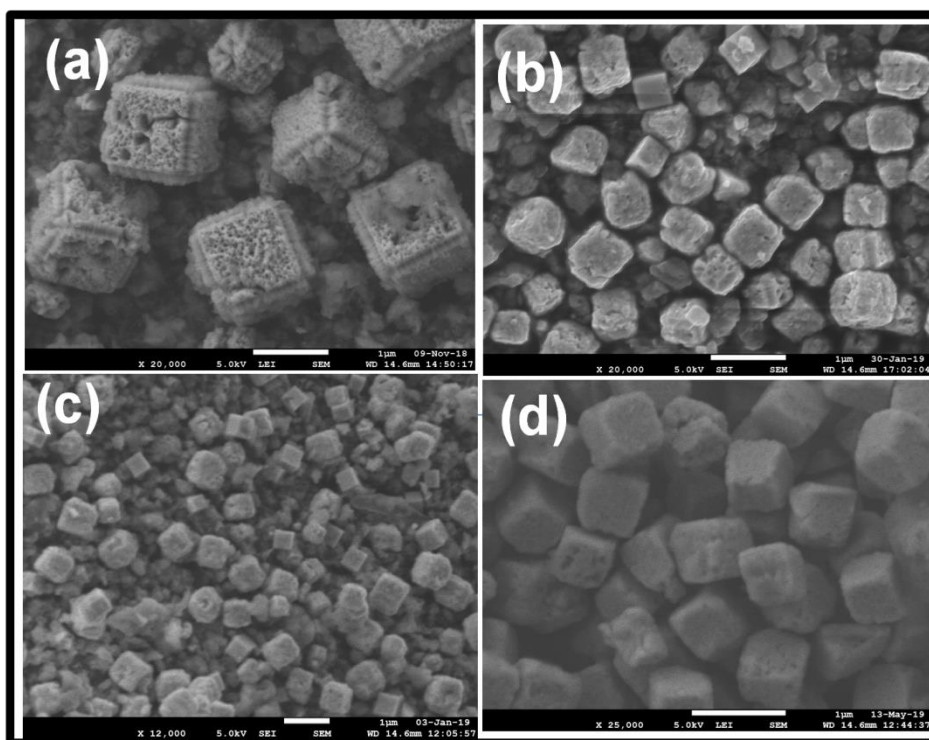
**Figure S3:** EDS data of the synthesized (a) CN/Cu-1 (b) CN/Cu-2 (c) CN/Cu-3 (d) CN/Cu-4 and (e) CN/Cu-6 composites.



**Figure S4:** (a) Point id image of CN/Cu-5 catalyst showing three different locations and their corresponding EDS data are (b) Spectrum 1 (c) Spectrum 2 and (d) Spectrum 3.



**Figure S5:** FE-SEM images of as synthesized g-C<sub>3</sub>N<sub>4</sub> (a) before sonication (CNBS) and (b) after one hour sonication (CNAS).



**Figure S6:** FESEM images of CN/Cu-5 catalyst as a function of temperature variation (a) 60°C (b) 70°C (c) 80°C and (d) 90°C respectively.

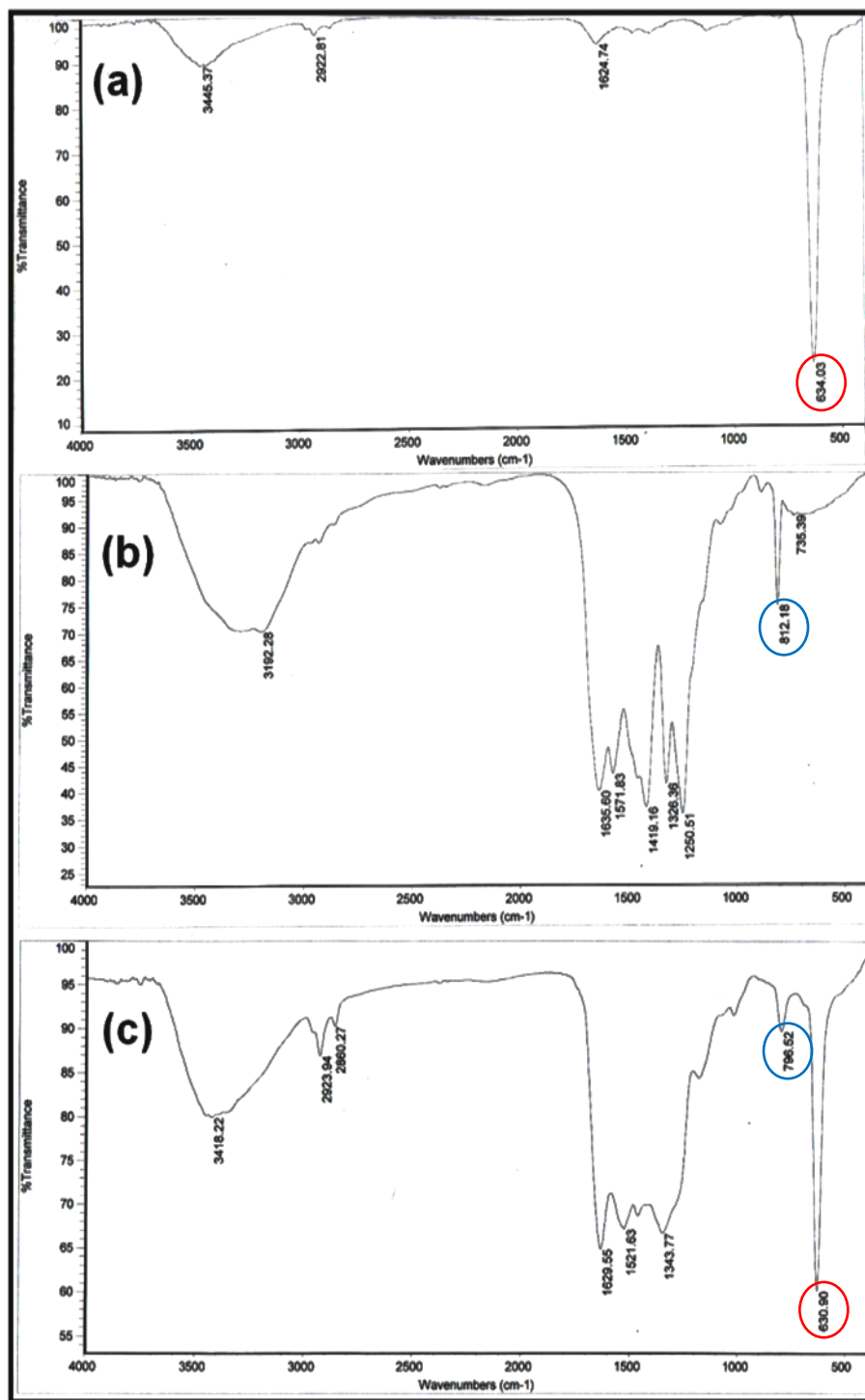
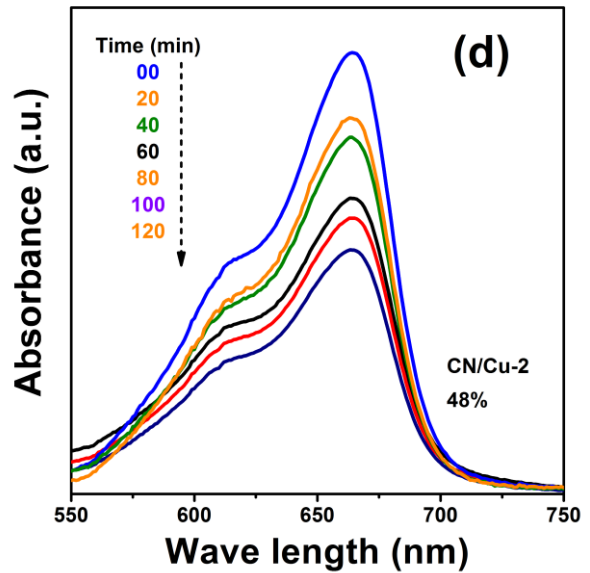
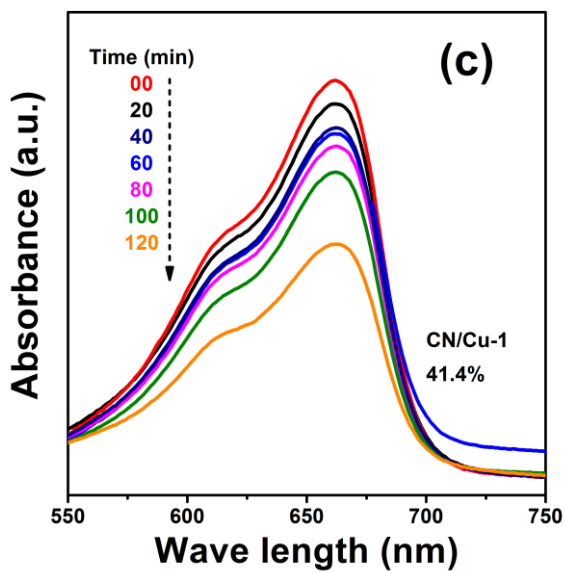
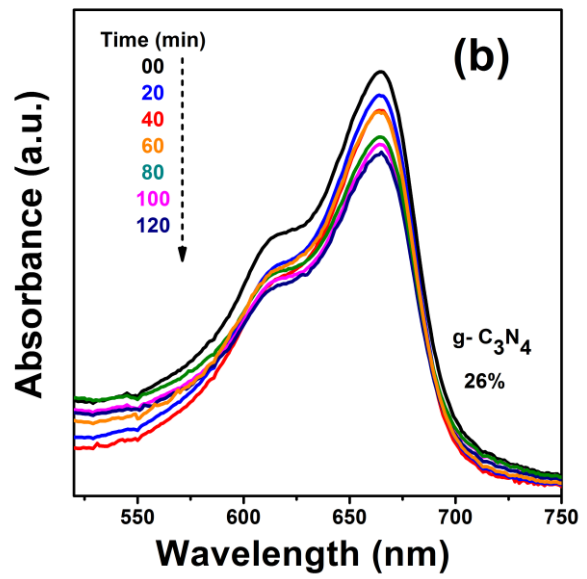
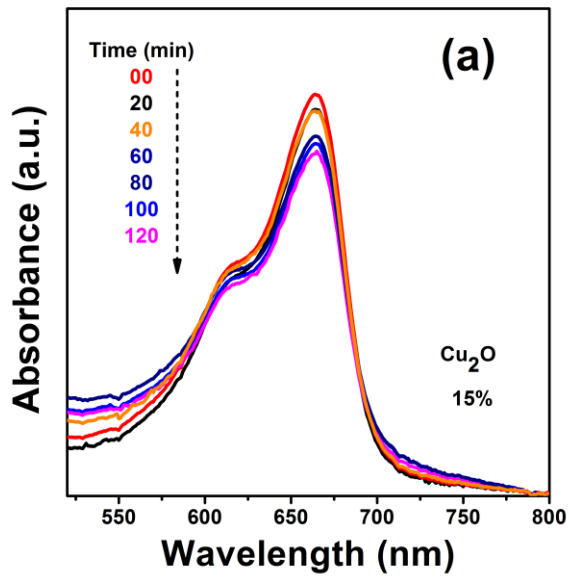
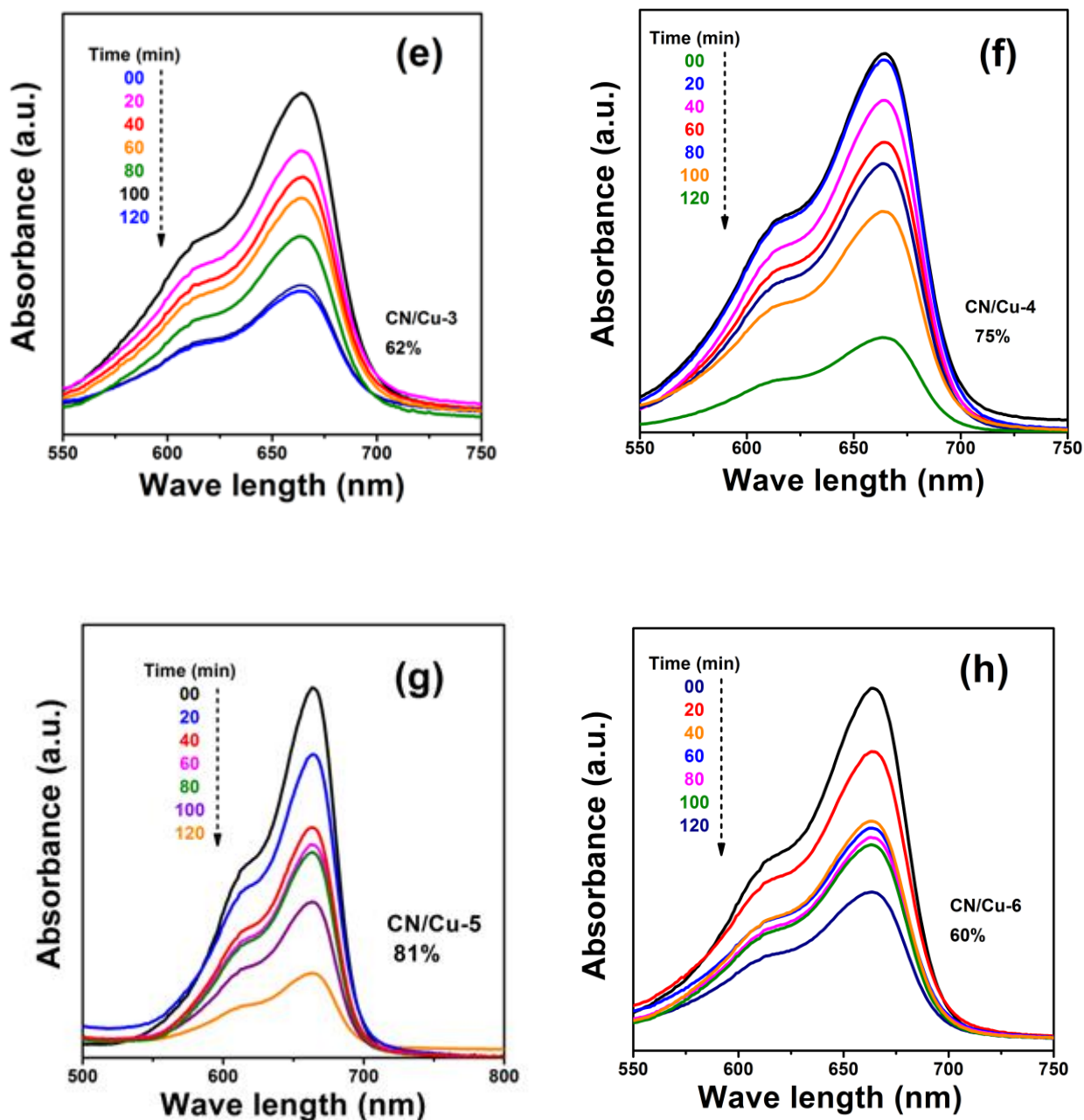


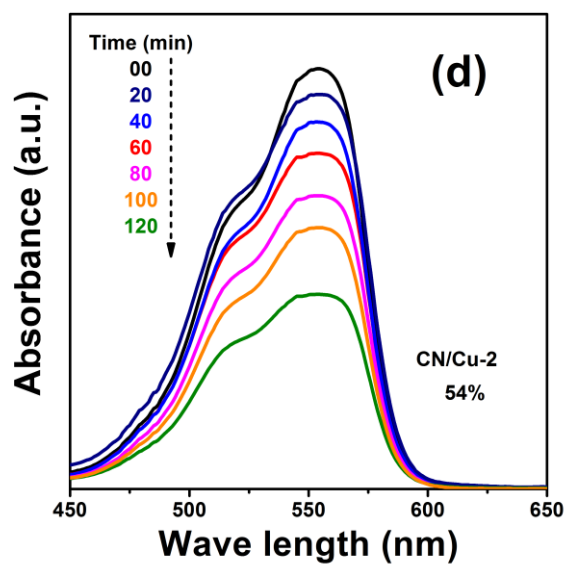
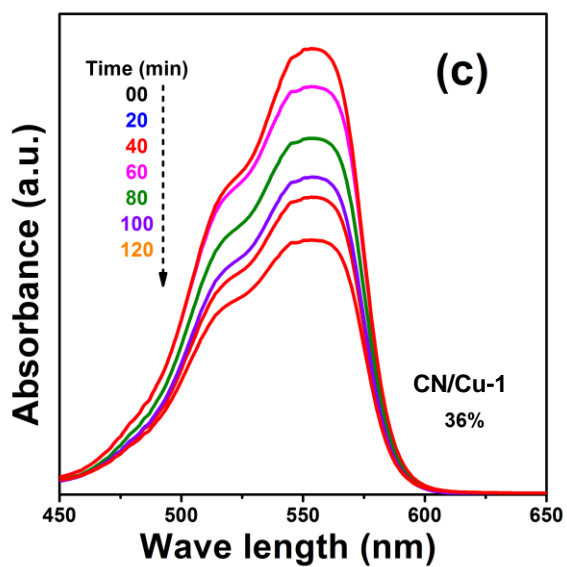
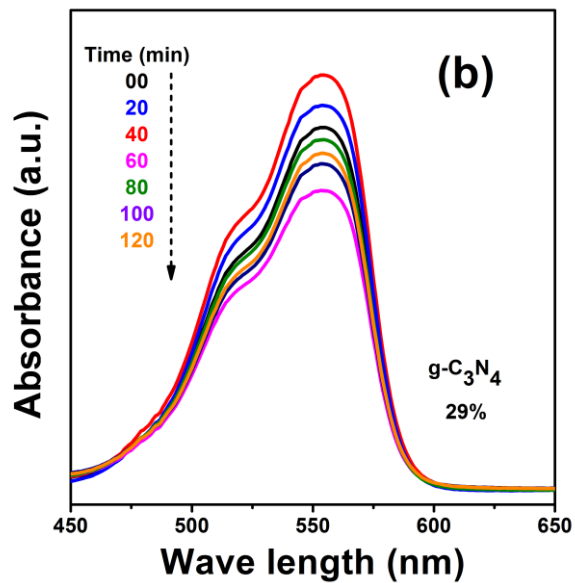
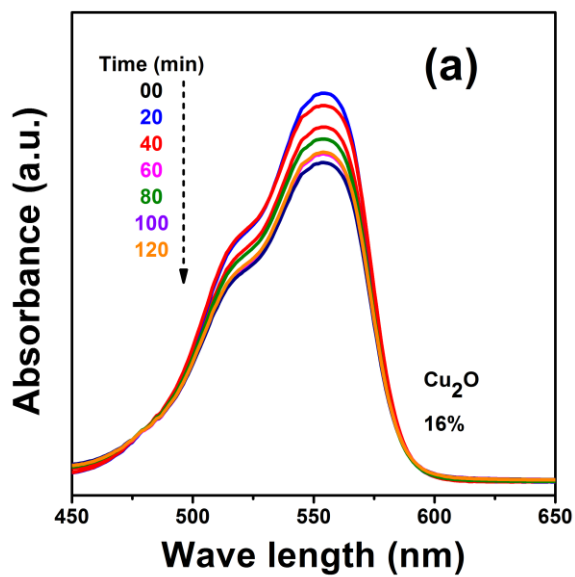
Figure S7: FT-IR spectra of as synthesized (a) Cu<sub>2</sub>O (b) g-C<sub>3</sub>N<sub>4</sub> and (c) CN/Cu-5 composite.

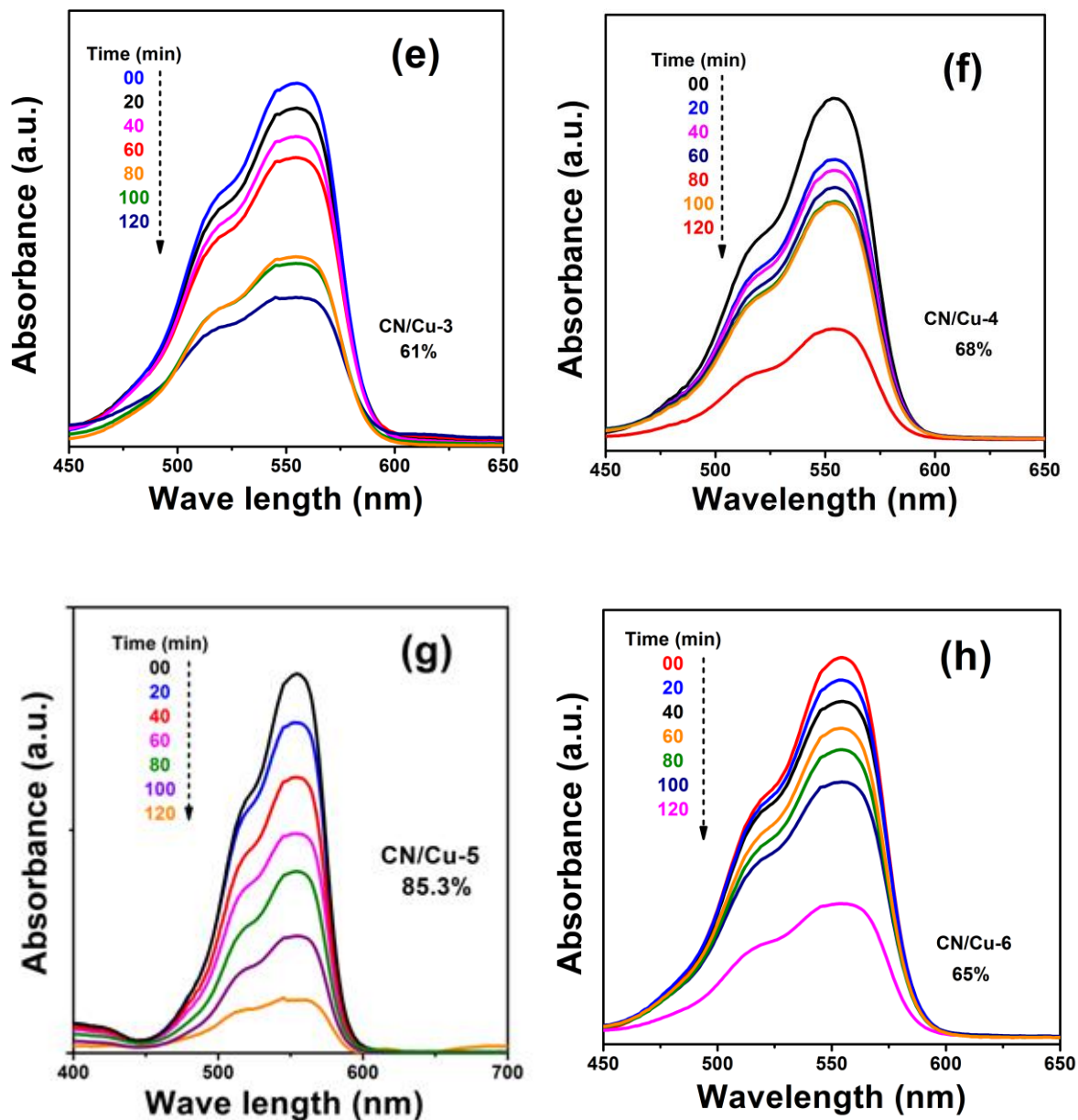




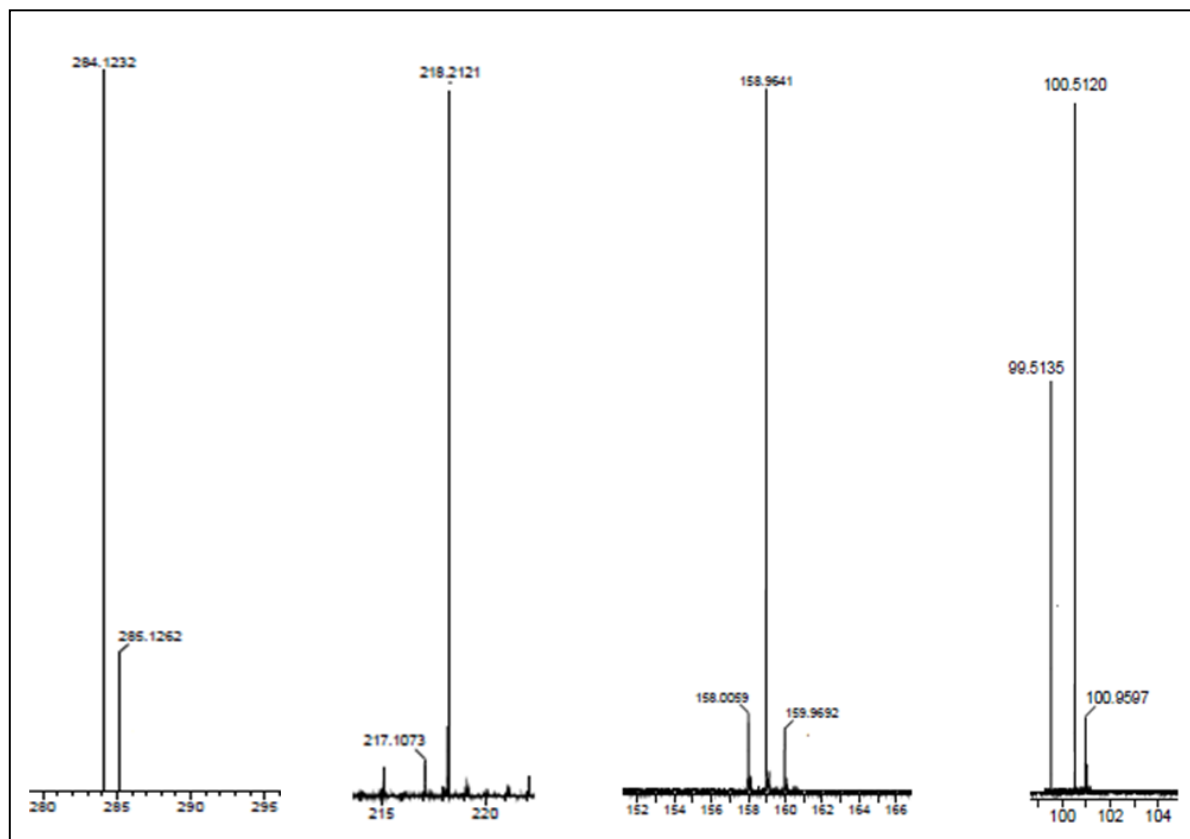
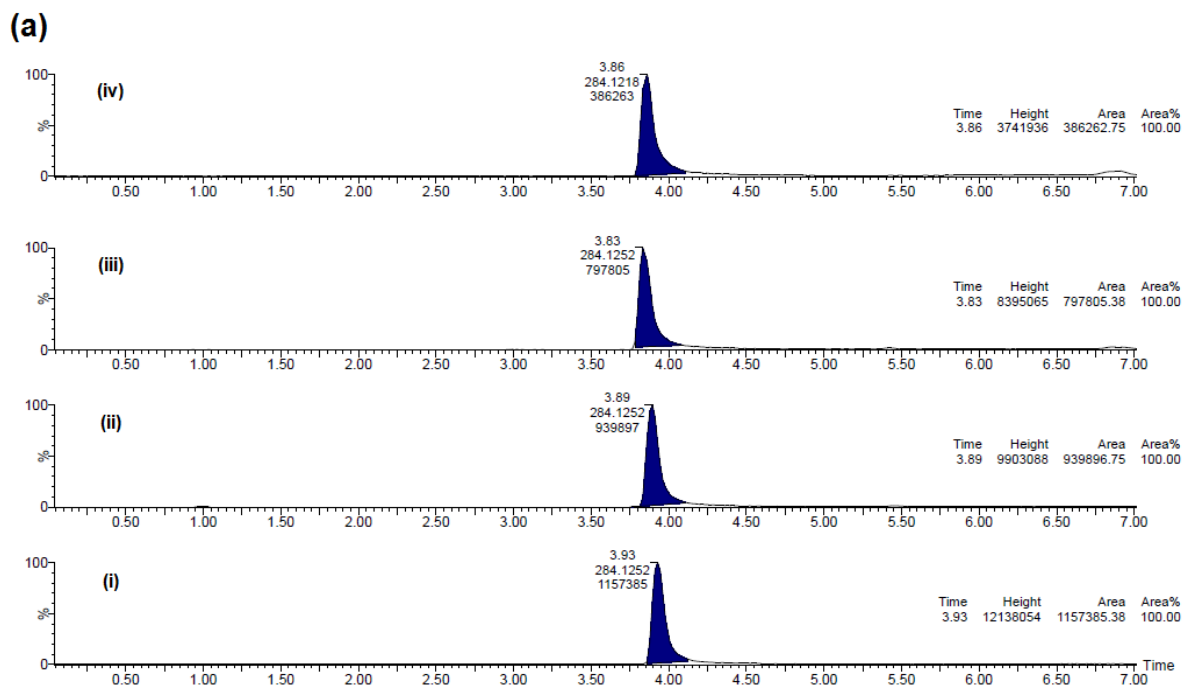


**Figure S8:** UV-Visible absorbance of Methylene Blue dye degradation with (a)  $\text{Cu}_2\text{O}$  (b)  $\text{g-C}_3\text{N}_4$  (c) CN/Cu-1 (d) CN/Cu-2 (e) CN/Cu-3 (f) CN/Cu-4 (g) CN/Cu-5 and (h) CN/Cu-6 catalyst under visible light irradiation for 120 min.

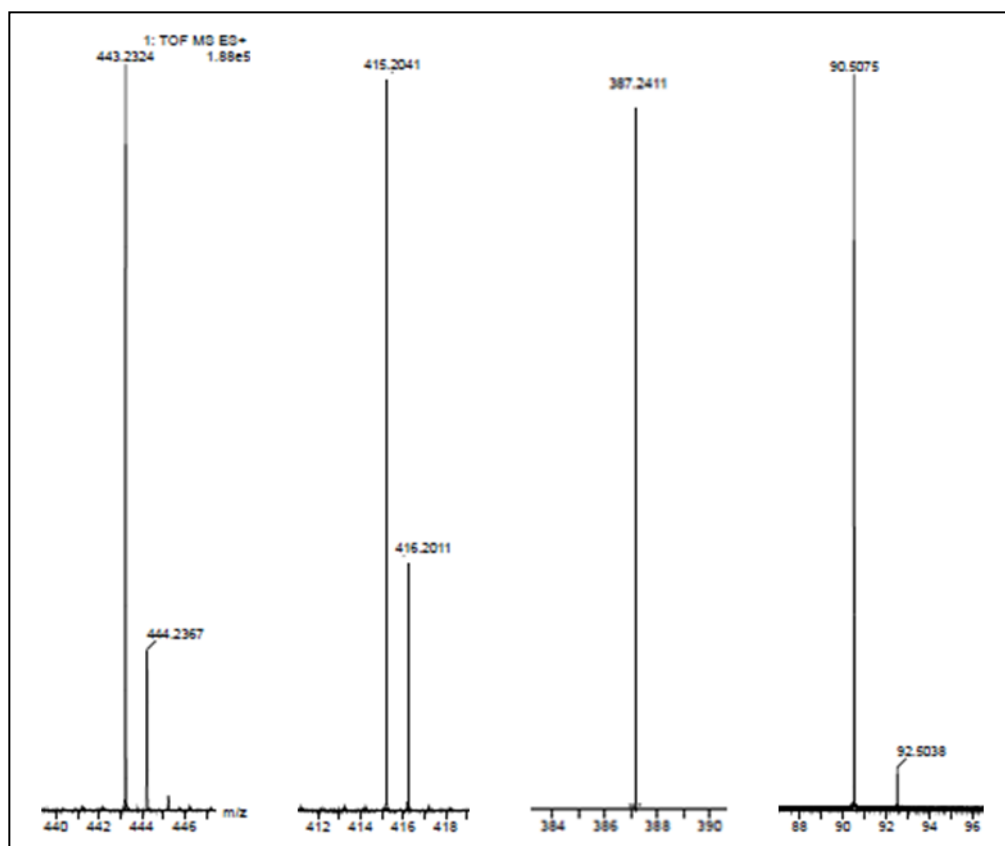
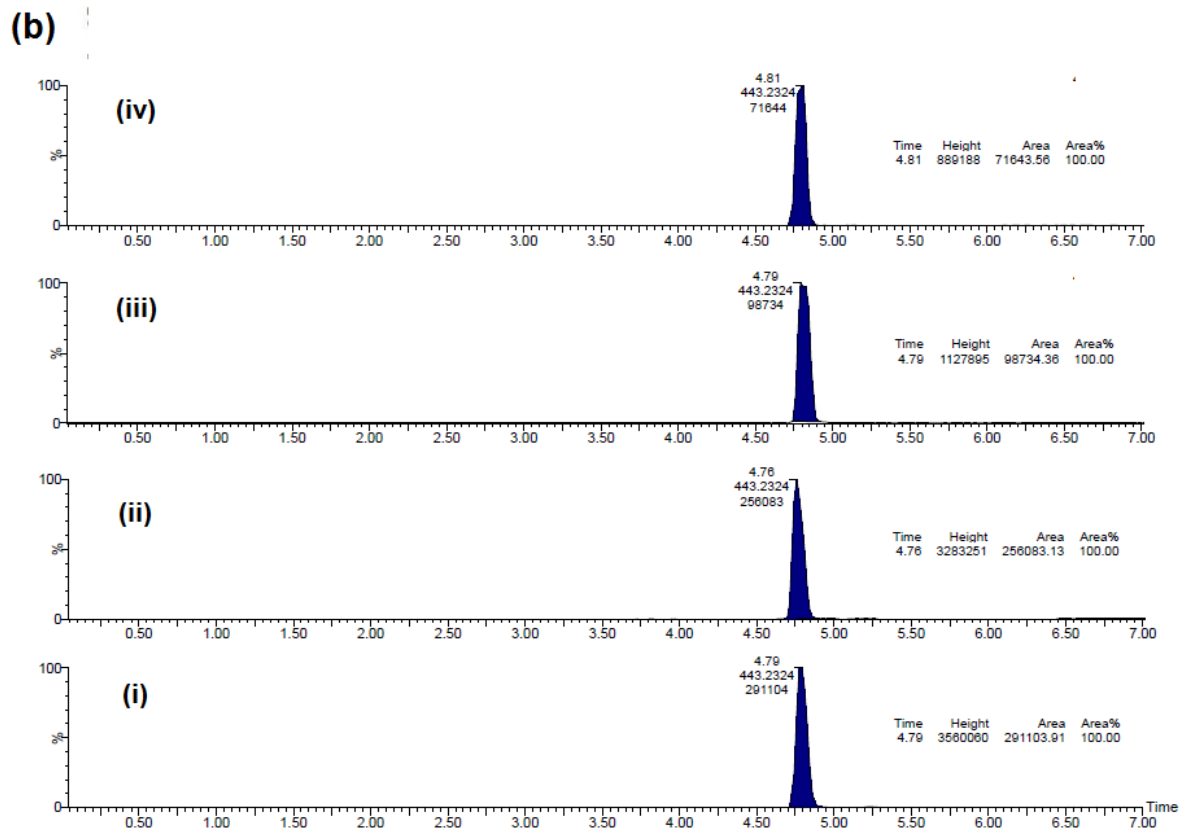




**Figure S9:** UV-Visible absorbance of Rhodamine-B dye with (a)  $\text{Cu}_2\text{O}$  (b)  $\text{g-C}_3\text{N}_4$  (c) CN/Cu-1 (d) CN/Cu-2 (e) CN/Cu-3 (f) CN/Cu-4 (g) CN/Cu-5 and (h) CN/Cu-6 catalyst under visible light irradiation for 120 min.



**Figure S10:** LC-MS chromatogram of Methylene Blue dye. LC showing the change in the area with time 't' and mass spectra showing the degraded products at various m/z values.



**Figure S11:** LC-MS chromatogram of Rhodamine B dye. LC showing the change in the area with time 't' and mass spectra showing the degraded products at various m/z values.

**Table S1:** Intermediates identified during the degradation of Methylene Blue dye

<b>Product</b>	<b>MW</b>	<b>Name</b>
1	284	Methylene Blue
2	218	2-amino-5-(methylamino)-hydroxybenzenesulfonic acid
3	158	Benzenesulfonic acid

**Table S2:** Intermediates identified during the degradation of Rhodamine-B dye

<b>Product</b>	<b>MW</b>	<b>Name</b>
1	443	Rhodamine-B
2	415	N,N-diethyl-N'-ethylrhodamine
3	387	N,N-diethylrhodamine
4	90	2-hydroxy propanoic acid