

## Supporting Information

### Remarkable Colorimetric Sensing Behavior of Pyrazole-based Chemosensor Towards Cu(II) Ion Detection: Synthesis, Characterization and Theoretical Investigations

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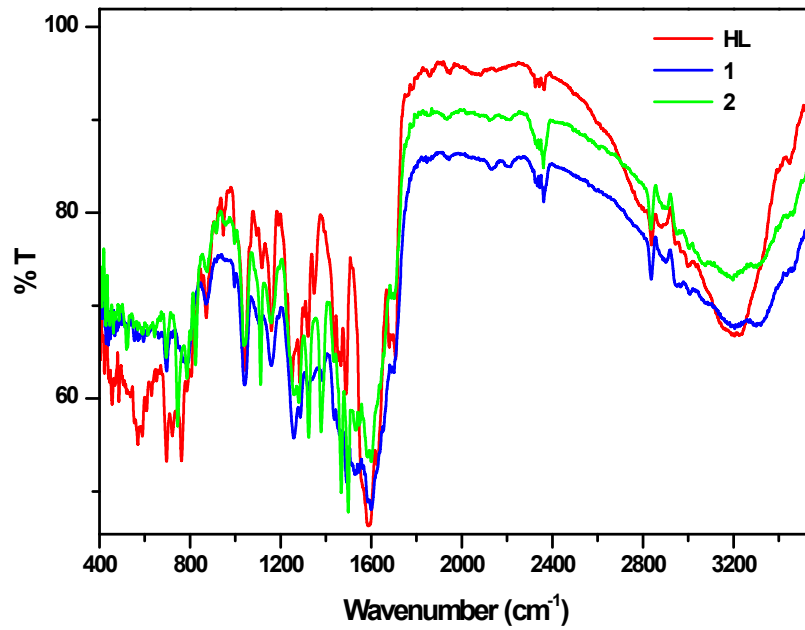
**Figure S1:** The FT-IR spectra of the **HL** and Cu(II) complexes, **1** and **2**.

**Figure S2:** The <sup>13</sup>C NMR spectrum of compound **HL**.

**Figure S3:** ESI-HRMS of complex **1**.

**Figure S4:** ESI-HRMS of complex **2**.

**Table S1:** Detection limit towards Cu<sup>2+</sup> ion sensing by various chemosensors.



**Figure S1:** The FT-IR spectra of the HL and Cu(II) complexes, **1** and **2**.

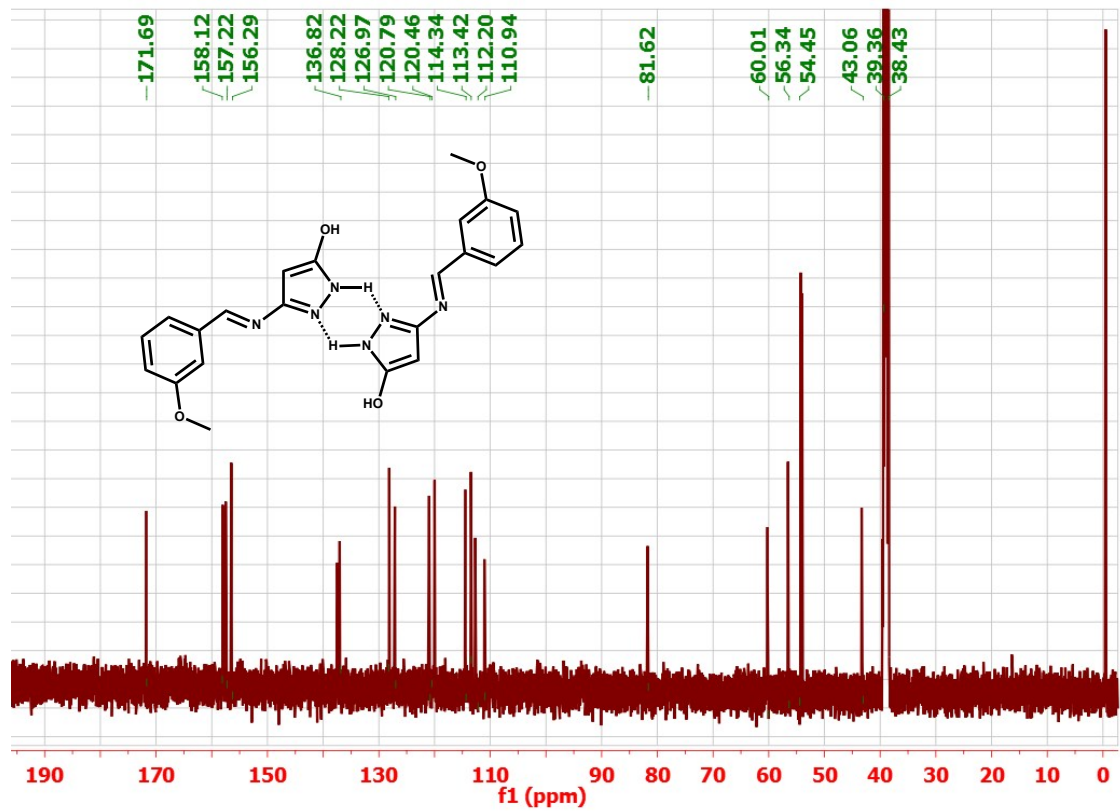


Figure S2: The  $^{13}\text{C}$  NMR spectrum of compound HL.

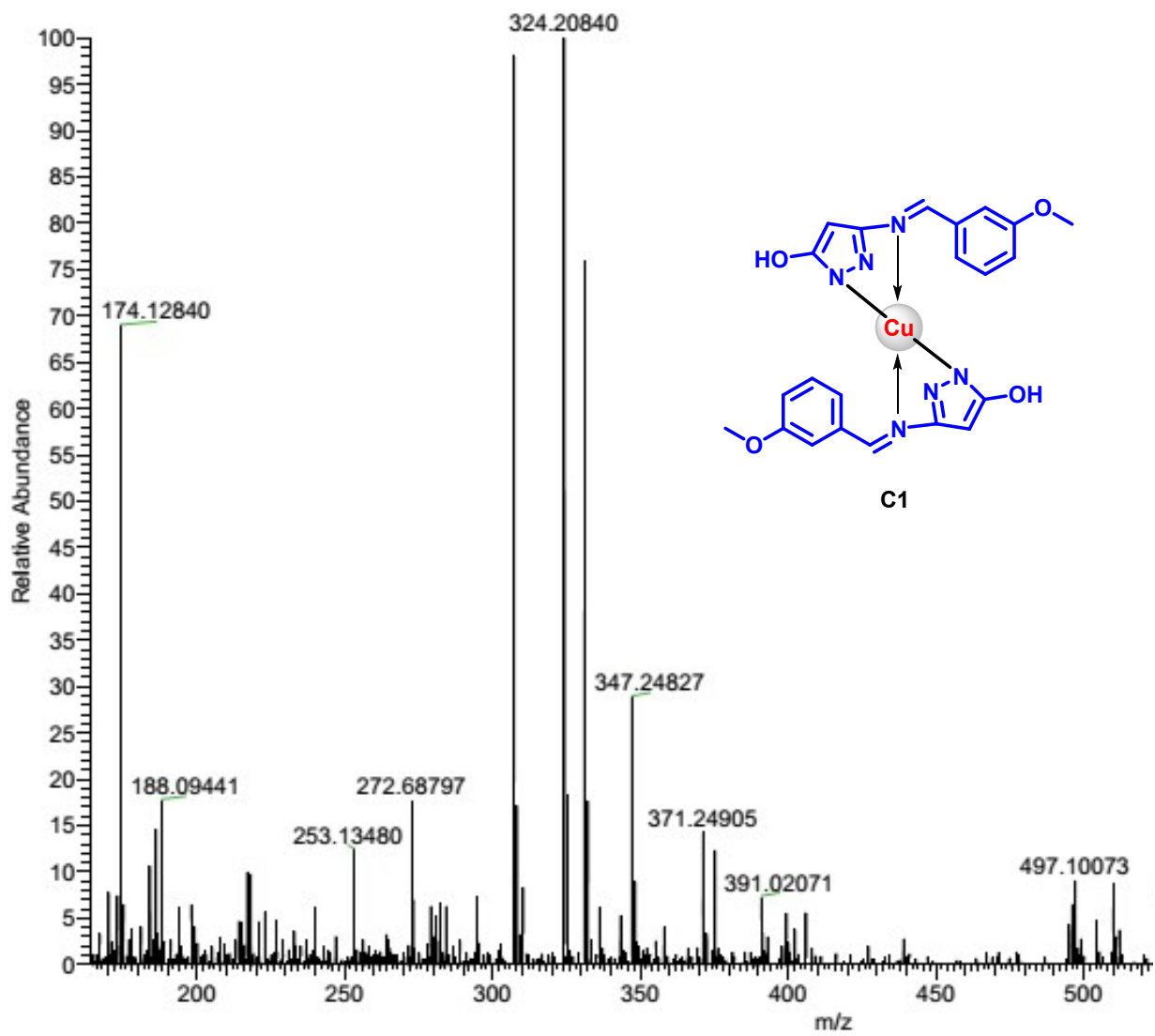


Figure S3: ESI-HRMS of complex 1.

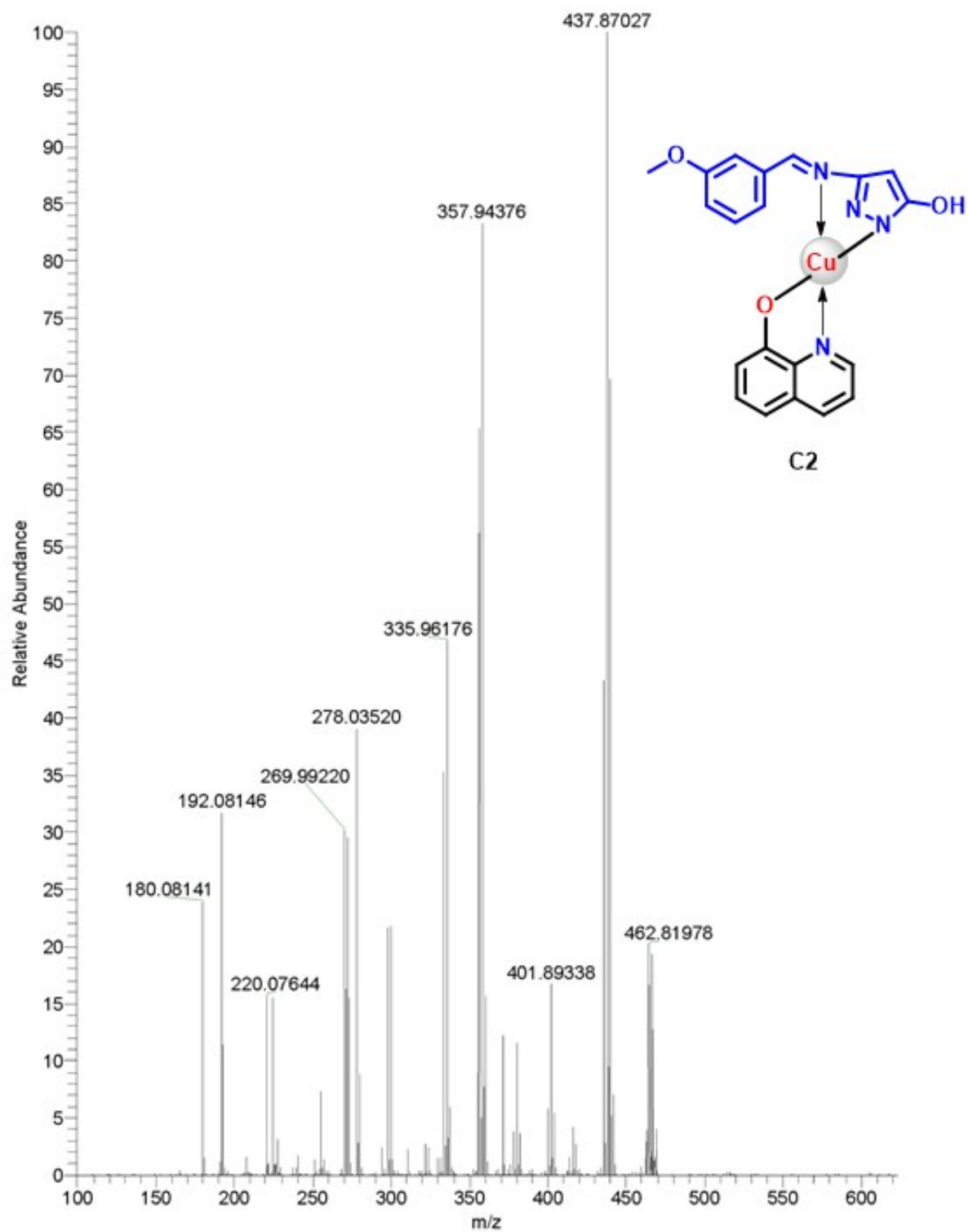
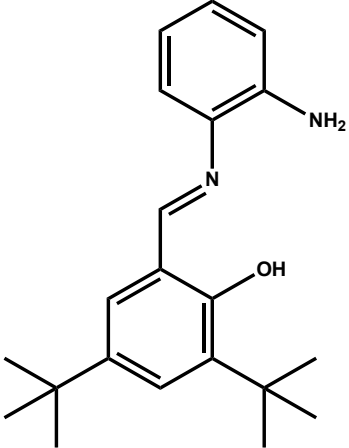
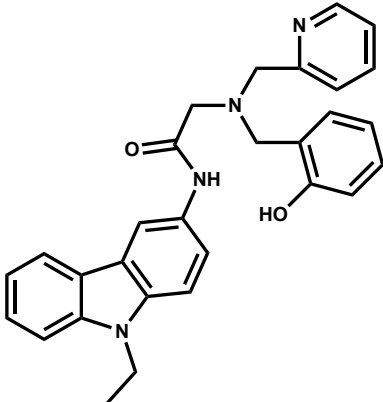
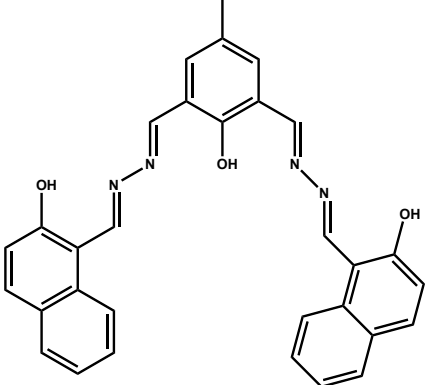
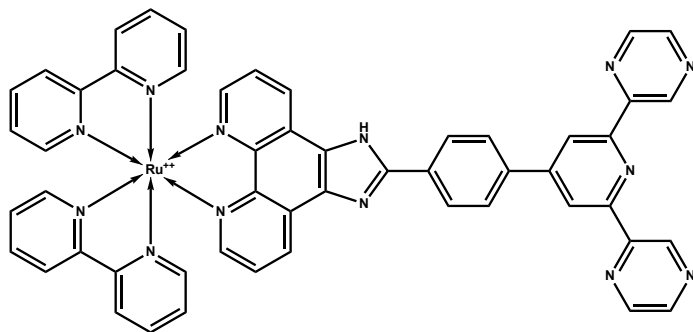


Figure S4: ESI-HRMS of complex 2.

**Table S1:** Detection limit towards Cu<sup>2+</sup> ion sensing by various chemosensors.

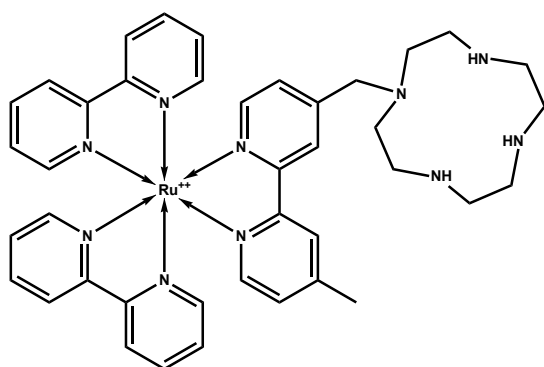
Sensor reported in the literature	Lowest detecting ability of Cu <sup>2+</sup> ions from solution
 <p><b>Colorimetric sensor</b> doi: 10.1080/00958972.2017.1420787</p>	1.66 μM
 <p><b>Colorimetric sensor</b> doi: 10.1016/j.snb.2016.01.133</p>	2.9 μM
 <p><b>Colorimetric sensor</b> doi: 10.1016/j.tetlet.2013.09.126</p>	5 μM



2.73  $\mu\text{M}$

**Fluorescence sensor**

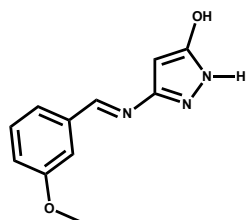
doi: 10.1016/j.snb.2015.06.124



5.4  $\mu\text{M}$

**Fluorescence sensor**

doi:10.1039/C3DT51047F



1.60  $\mu\text{M}$

**Our system**