Supplementary Information:

Colorimetric and “turn-on” fluorescent determination of Cu\(^{2+}\) ion based on rhodamine-quinoline derivative

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**Figure S1.** $^1$H NMR spectra of rhodamine-quinoline derivative 1; b) ESI-MS spectrum of rhodamine-quinoline derivative 1; c) ESI-MS spectrum of rhodamine-quinoline derivative 1-Cu$^{2+}$ complex.

**Figure S2.** The schematic graph of the experimental set-up.
**Figure S3.** The reaction dynamic curves for colorimetric responses of Cu$^{2+}$ at different concentrations.

**Figure S4.** pH effect to the colorimetric responses of Cu$^{2+}$. 
**Figure S5.** The colorimetric response of rhodamine-quinoline derivative. a) Black columns: rhodamine-quinoline derivative-Cu$^{2+}$ complex compound with the coexistence of nine different interferent ions; b) Grey columns: nine individual interferent ions without Cu$^{2+}$.

**Table S1.** Summary of the parameters of ESI-MS.

<table>
<thead>
<tr>
<th>Parameters of ion source</th>
<th>GA$_1$</th>
<th>ABA</th>
<th>JA</th>
<th>GA$_3$</th>
<th>p-HCA</th>
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<tbody>
<tr>
<td>Capillary voltage (kV)</td>
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<td>Nebulizer (psi)</td>
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<td>Nozzle voltage (V)</td>
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<td>Sheath gas flow (Lmin$^{-1}$)</td>
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<td>Sheath gas temperature (°C)</td>
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<td>Gas flow (Lmin$^{-1}$)</td>
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<td>Gas heater (°C)</td>
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