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Assembly and disassembly activity of two AIEE model compounds and its potential application

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Abstract

Aggregation-induced emission (AIE) has received great attention. In this paper, Cu^{2+} induced self-assembly and H_2S induced disassembly of two aggregation–induced emission enhancement (AIEE) compounds were reported in this paper. Two salicylaldehyde azine Schiff base were synthesized and characterized. It is found that **1** and **2** are AIEE active molecular both in aqueous solution and crystal state with strong yellow fluorescence. Theirs fluorescence can be selectively quenched in the presence of Cu^{2+} ions with the formation of self-assembly system $[\mathbf{1\text{-}Cu^{2+}}]_n$. The interaction mechanism has been researched by multiple means. Depending on this reaction, energy changes (ΔG) from **1** to $[\mathbf{1\text{-}Cu^{2+}}]_n$ was also estimated by Scatchard formula. Moreover, the quenching fluorescence was further restored by H_2S both in tube and live cells along with the releasing of AIEE molecular **1**. That is, a reversible process between AIEE, self-assembly and disaggregation can be found in the model compound.

Graphical abstract