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Quinoline containing acetyl hydrazone: An easily accessible switch-on optical chemosensor for Zn^{2+}

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Abstract:

A simple chemosensor, namely, N-((quinolin-8-yl)methylene)acetohydrazide (**1**) was synthesized and used as an off–on fluorescence sensor, which exhibits high selectivity toward Zn^{2+} in aqueous media. The probe has large Stokes shift of more than 200 nm, and its detection limit for Zn^{2+} is 89.3 nM. The binding process was confirmed through UV–vis absorption analysis, fluorescence measurements, mass spectroscopy study, ^{1}H NMR spectra and density functional theory calculation. The crystal structures of Zn^{2+}, Ni^{2+}, and Cu^{2+} complexes based on **1** were determined through X-ray crystallographic analysis. The fluorescent probe was then applied to monitor intracellular Zn^{2+} in HeLa cells.

Key words: Fluorescent sensor; Zn^{2+}; hydrazone; quinoline.