# Swift photoswitching in a binuclear Zn(II) metallacycle relative to Salen-type ligand

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Supporting Information Placeholder

**Contents:**

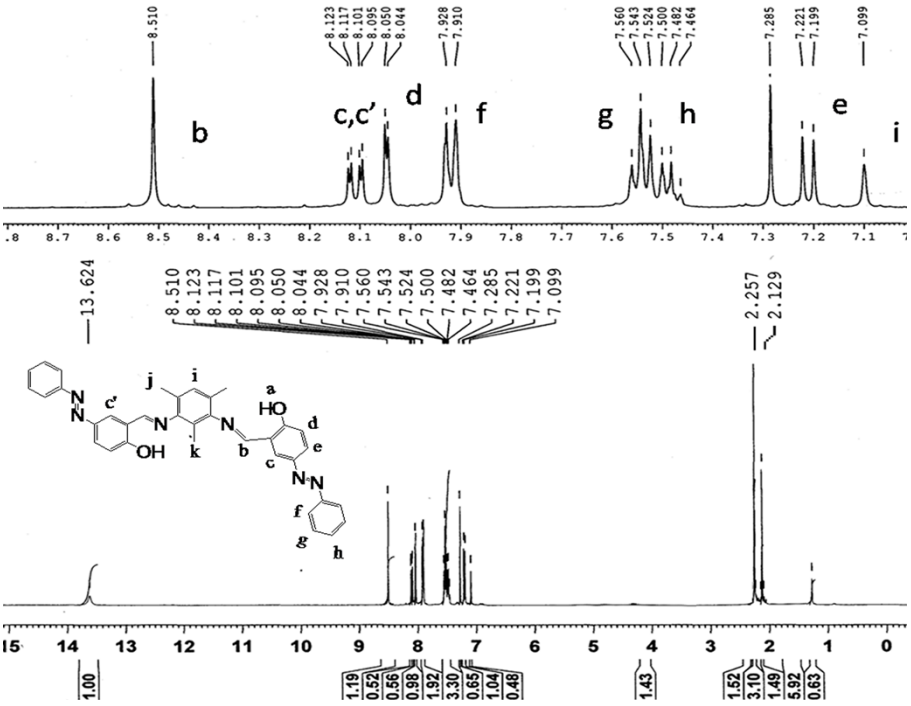


**Fig. S1** $^{1}$H NMR spectrum of $\mathbf{H_2L}$.

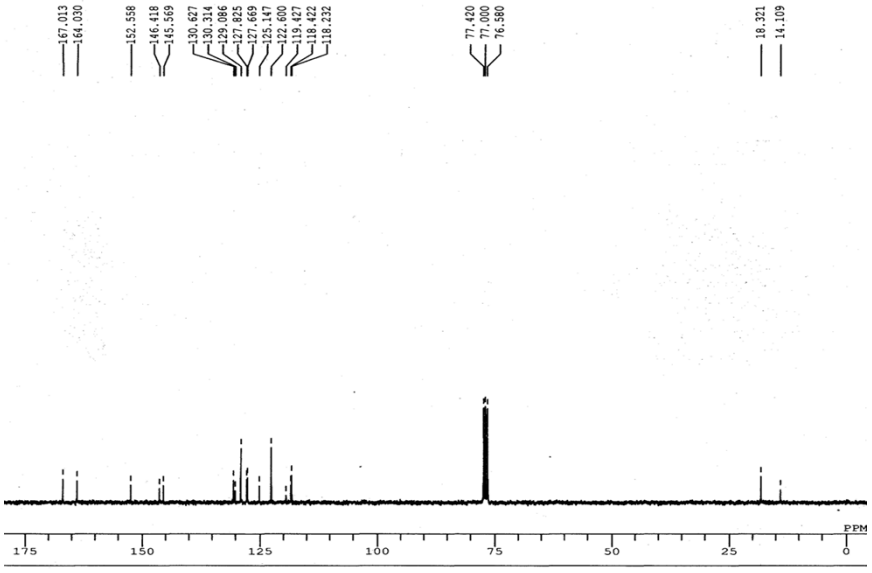


**Fig. S2** $^{13}$C NMR spectrum of $\mathbf{H_2L}$.

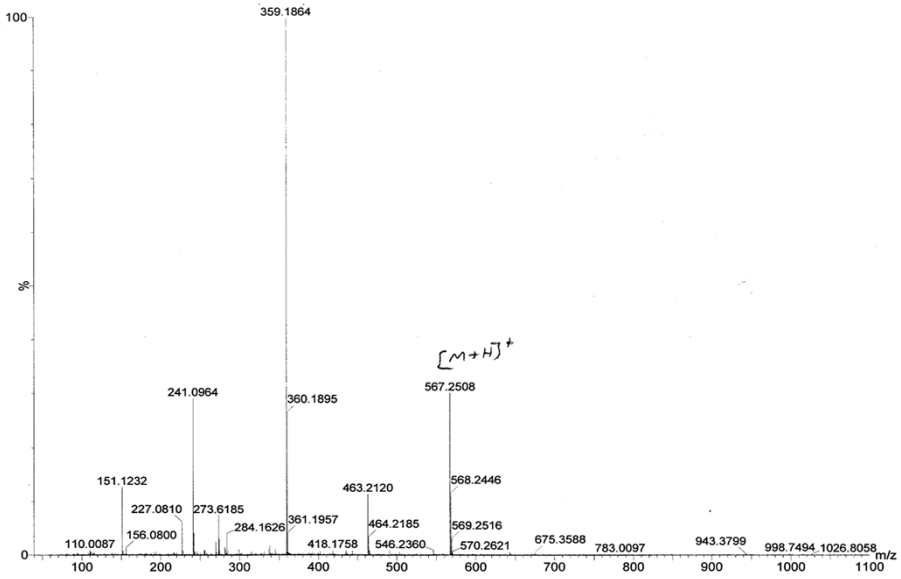


**Fig. S3** ESI-Mass Spectrum of $\mathbf{H_2L}$.

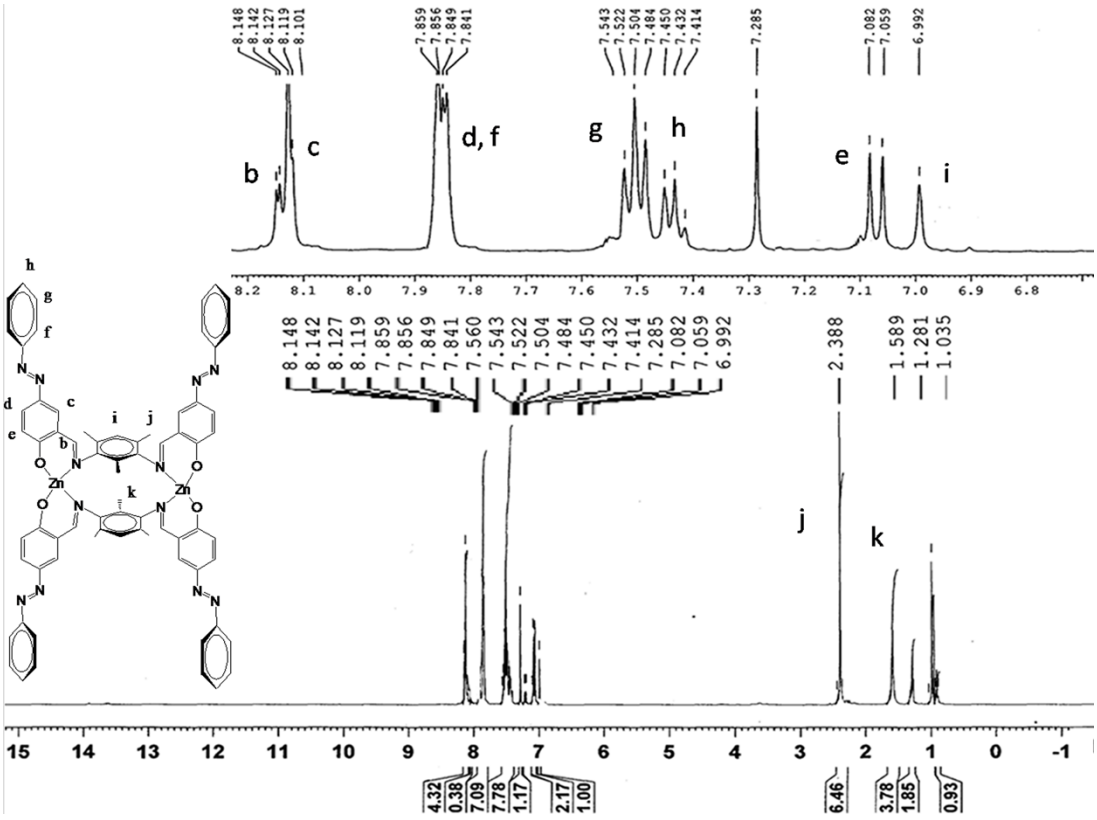


**Fig. S4** $^1$H NMR Spectrum of **1**.

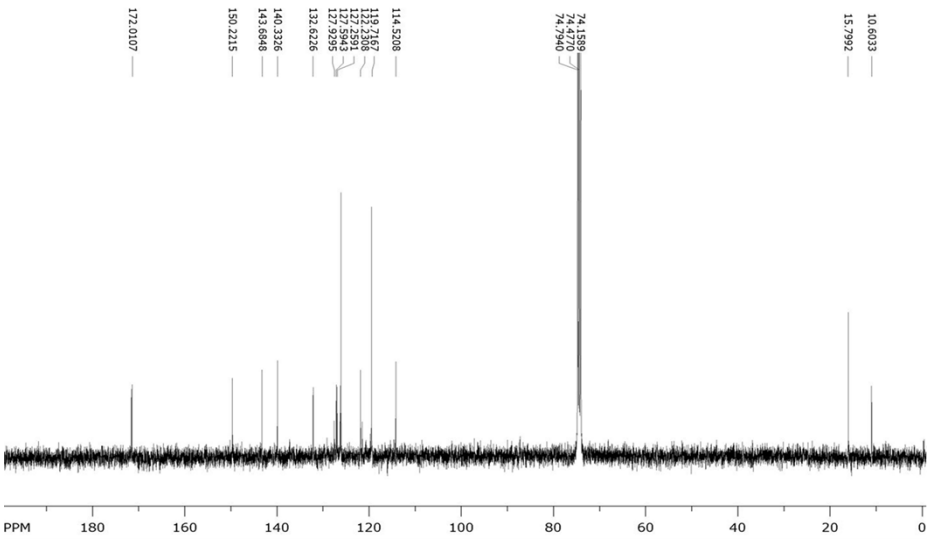


**Fig. S5** $^{13}C$ NMR spectrum of **1**.

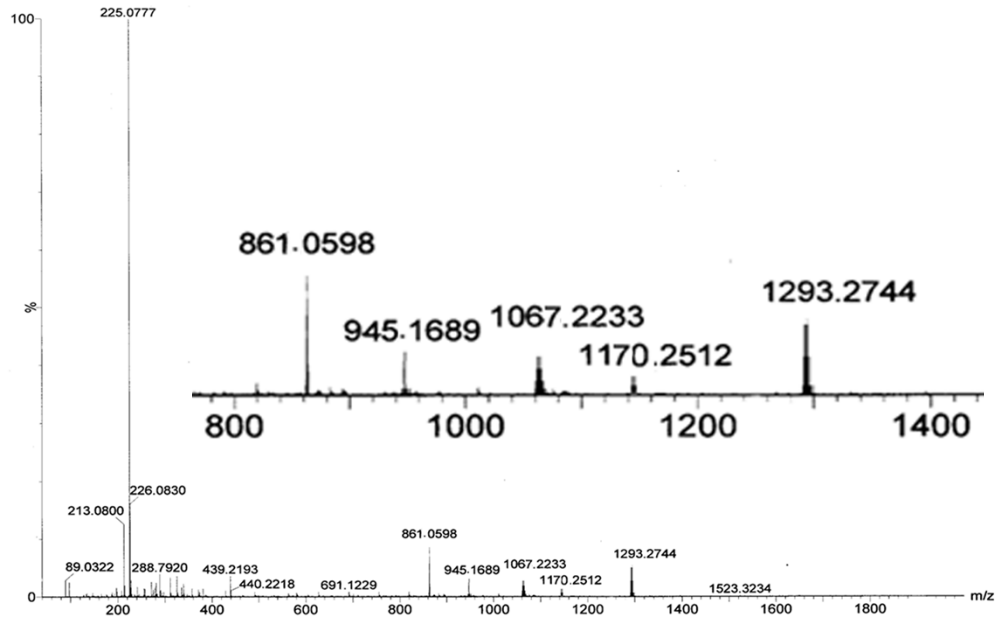


**Fig. S6** ESI-Mass Spectrum of **1**.

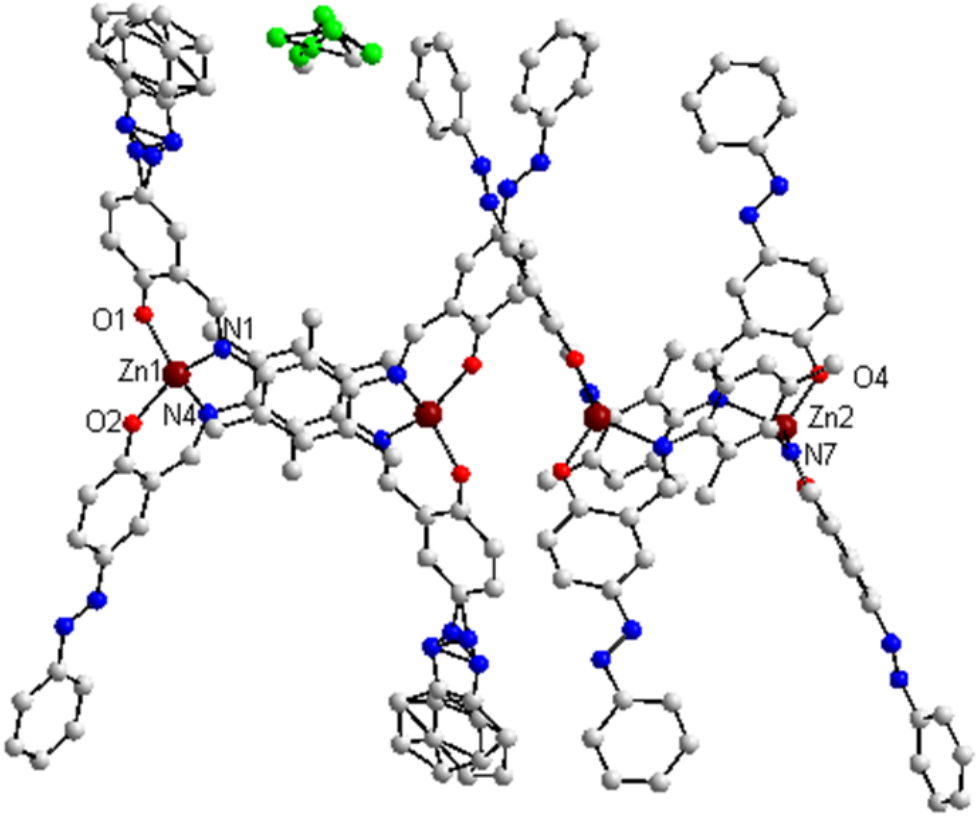


**Fig. S7** Complete view of the crystal structure of **1** including both disordered and non-disordered molecule (Hydrogen atom and solvent molecules have been omitted for clarity).

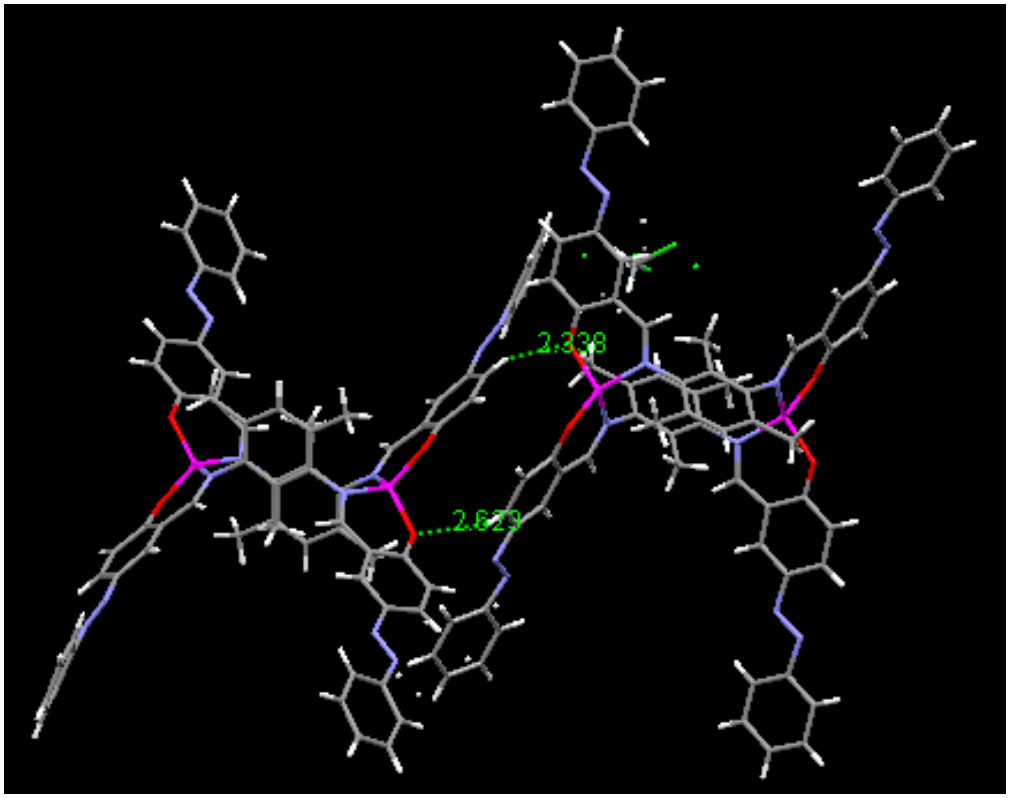


**Fig. S8** Intermolecular weak C–H···O interactions [C14–H14···O4; 2.623, and C43–H43···O2; 2.338 Å] in complex **1**.

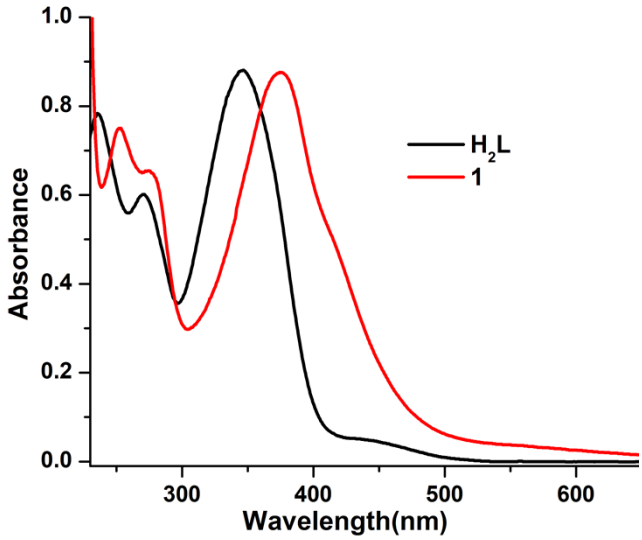


**Fig. S9** UV/vis spectra of **$H_2$L** and **1**.

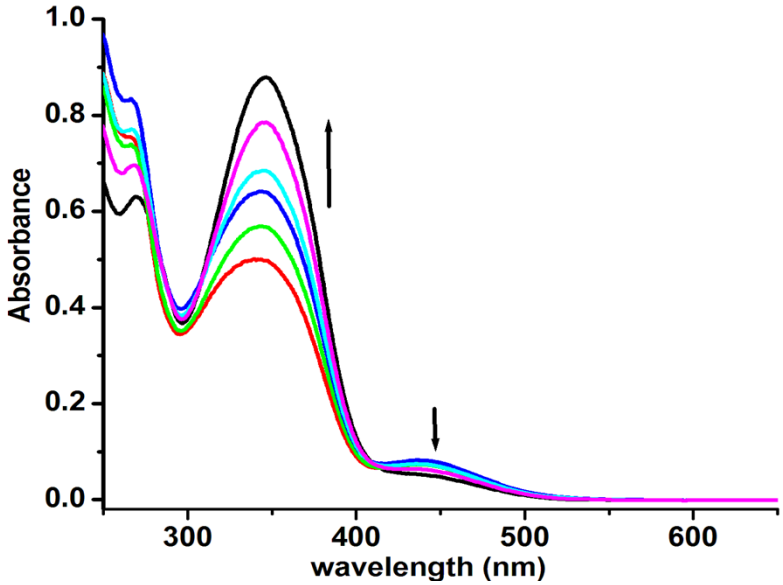


**Fig. S10** UV/vis spectra of Irradiated solution of **$H_2$L** (*cis*-**$H_2$L**, red line) left under ordinary light and record the spectra after 15 min, 60 min, 120 min, 180 min and 300 min time interval and reach the fully stable trans form (*trans*-$H_2$L, black line).

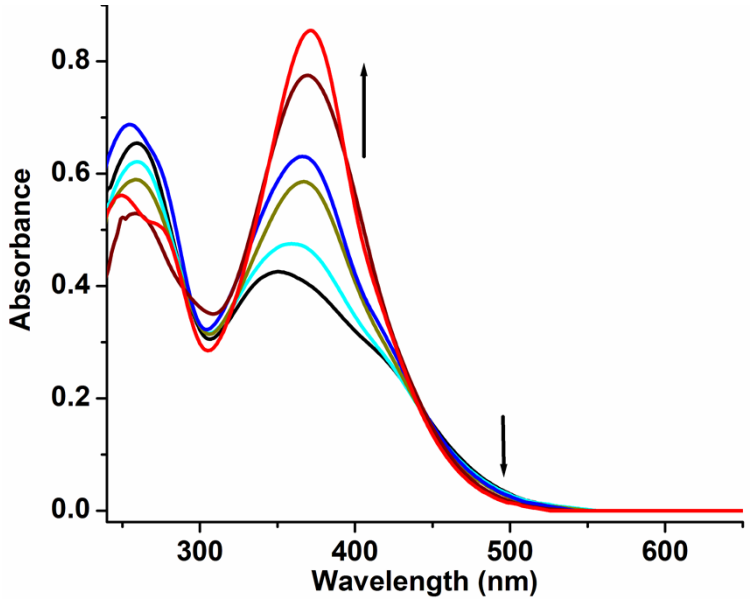


**Fig. S11** UV/vis spectra of Irradiated solution of **1** (*cis*-**1**, black line) left under ordinary light and record the spectra after 15 min, 30 min, 60 min, 120 min and 180 min time interval and reach the fully stable trans form (*trans*-**1**, red line).

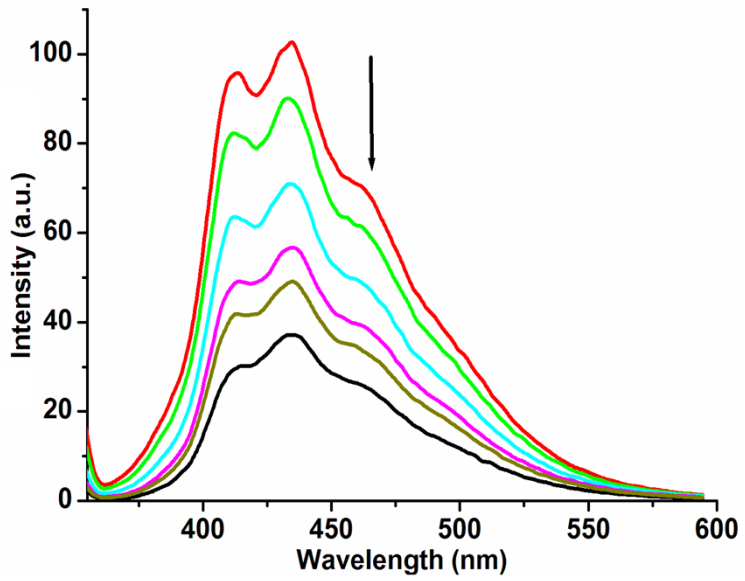


**Fig. S12** Emission spectra of Irradiated solution of $\mathbf{H_2L}$ (*cis*-$\mathbf{H_2L}$, red line) left under ordinary light and record the spectra after 15 min, 60 min, 120 min, 180 min and 300 min time interval and reach the fully stable trans form (*trans*-$\mathbf{H_2L}$, black line).

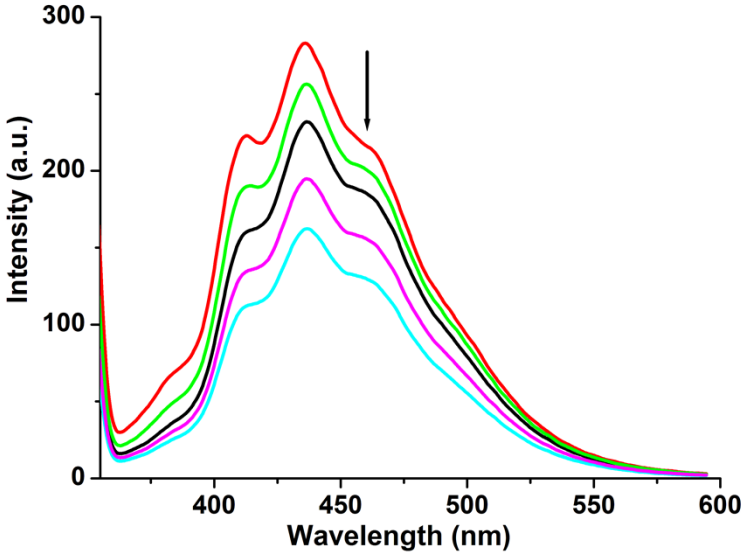


**Fig. S13** Emission spectra of Irradiated solution of **1** (*cis*-**1**, red line) left under ordinary light and record the spectra after 15 min, 60 min, 120 min and 180 min interval and reach the fully stable trans form (*trans*-**1**, cyan line).

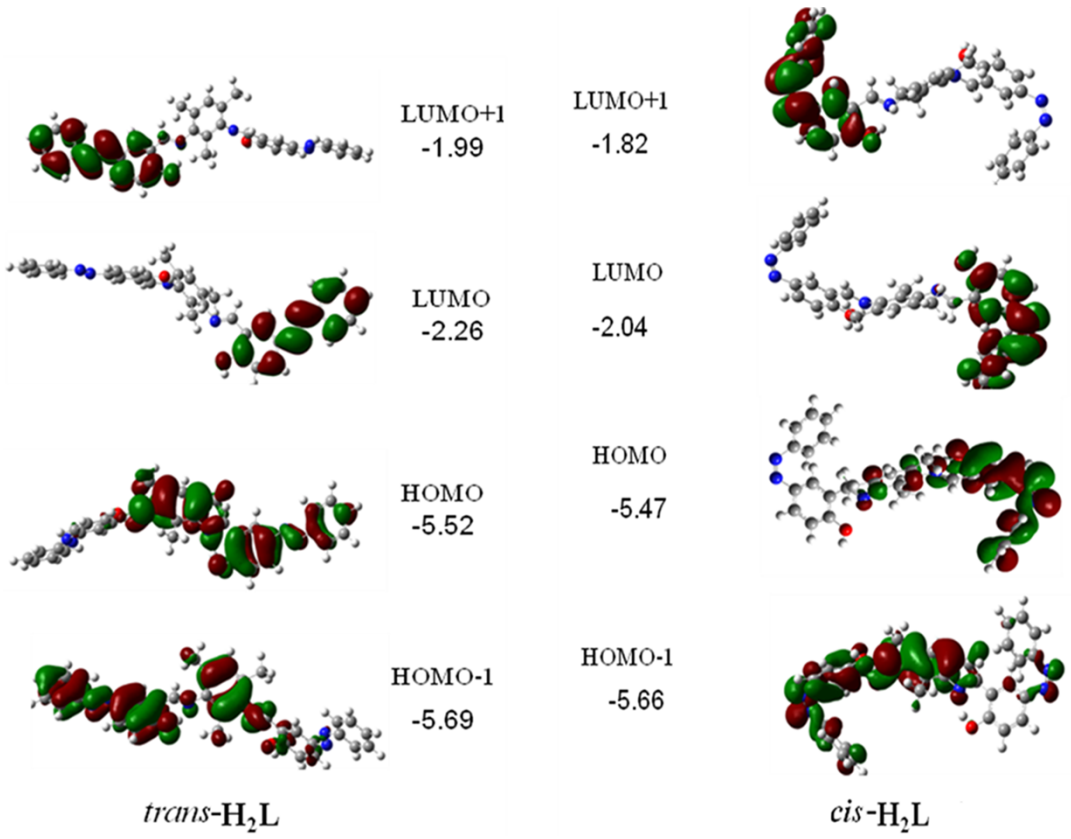


**Fig. S14** Calculated structures and energy levels of the frontier orbital HOMO-1, HOMO, LUMO and LUMO+1for the ligand *trans*-**$H_2$L** (left) and *cis*-**$H_2$L** (right).

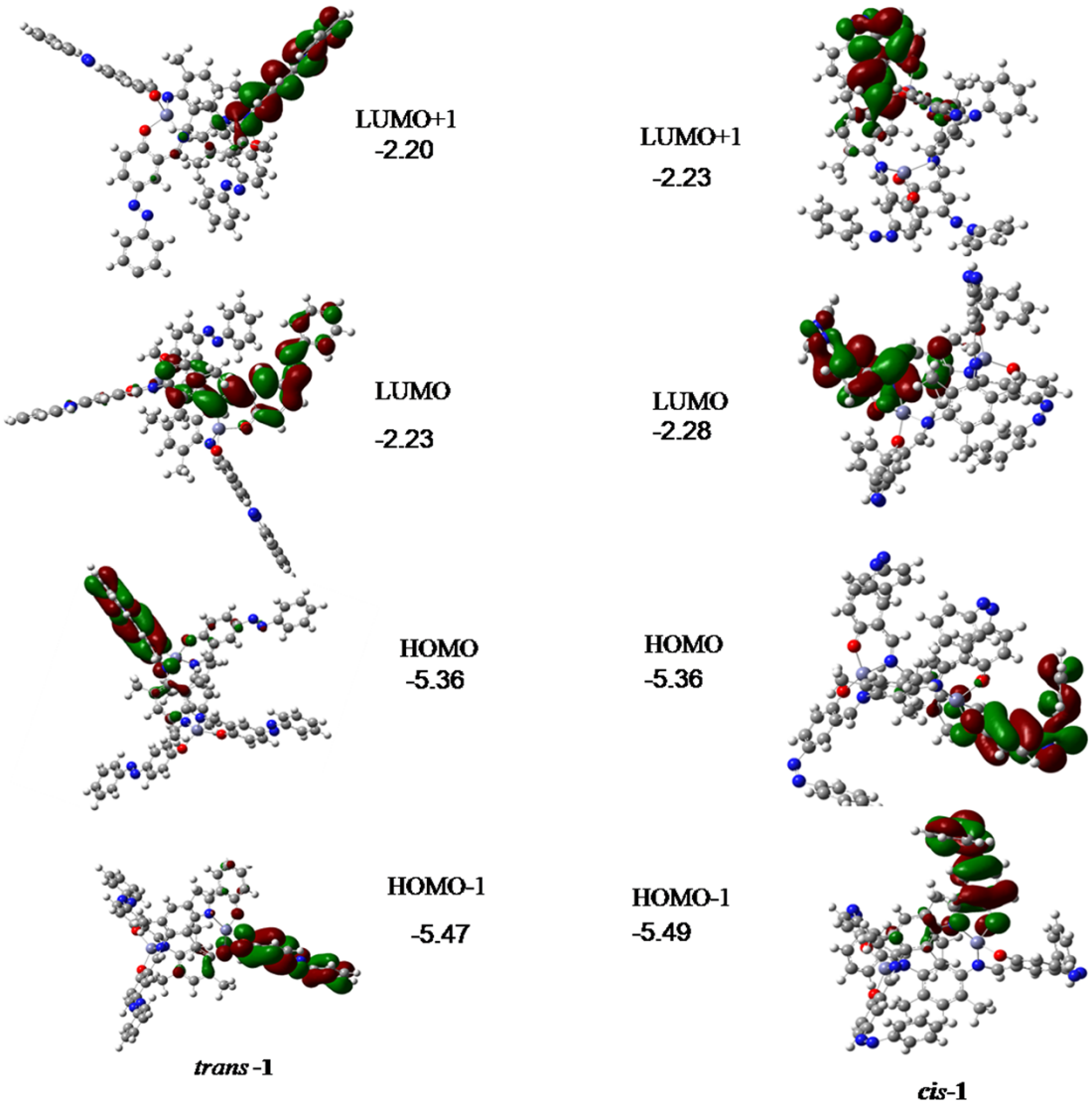


**Fig. S15** Calculated structures and energy levels of the frontier orbital HOMO-1, HOMO, LUMO and LUMO+1for the ligand *trans*-**1** (left) and *cis*-**1** (right).