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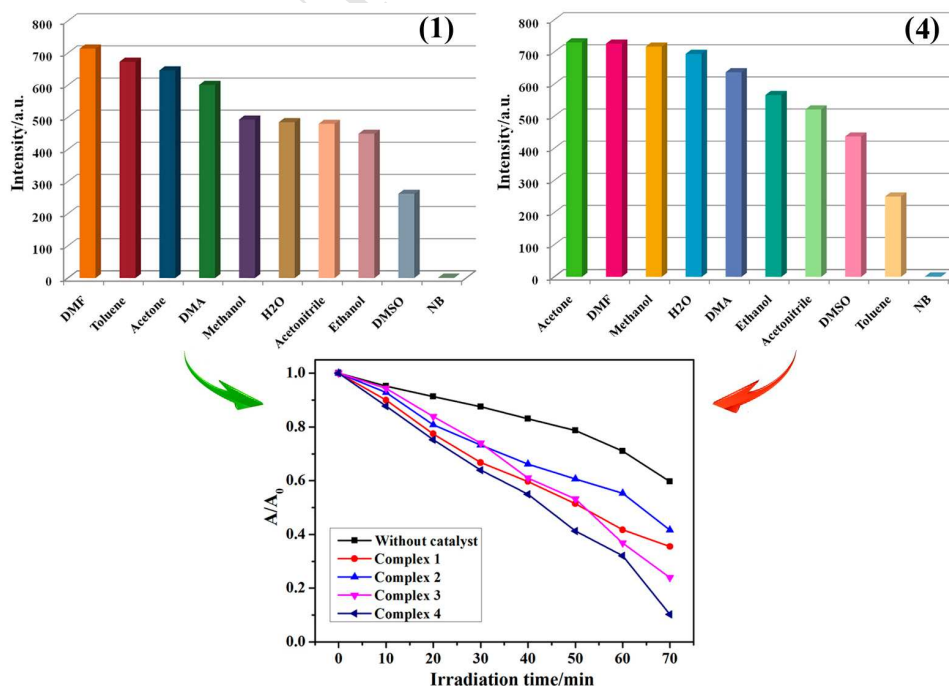
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Graphical Abstract

Selective fluorescence sensors and photocatalysis of four new luminescent coordination complexes

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Four new complexes, $[\text{Cd}(\text{ox})_{0.5}(\text{nim})(2,2'\text{-bipy})]_n$ (**1**), $[\text{Cd}(\text{nim})_2]_n$ (**2**), $[\text{Cd}(\text{nim})_2(\text{H}_2\text{O})_2]_n$ (**3**), and $[\text{Zn}(\text{nim})_2(\text{H}_2\text{O})_2 \cdot \text{H}_2\text{O}]$ (**4**) (Hnim = 4-nitroimidazolate, H_2ox =oxalic acid and 2,2'-bipy = 2,2'-bipyridine) have been prepared. **1-3** exhibit 2D grid networks, while complex **4** shows mononuclear structure. Sensing measurements revealed that **1** and **4** could be a prospective candidate for developing luminescence sensors, which showed significant and exclusive detection ability for the different organic solvents and nitro explosives. It exhibits high sensitivity for 4-nitrotoluene (4-NT) in the presence of other nitro aromatic compounds in DMF by luminescence quenching experiments. Furthermore, the photocatalytic activities of **1-4** were also discussed, in which exhibit efficient catalytic activity for the degradation of methylene violet (MV).



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