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A coumarin based azo-phenol ligand as efficient fluorescent “OFF-ON-OFF” chemosensor for sequential detection of Mg^{2+} and F^- : Application in live cell imaging and as molecular logic gate

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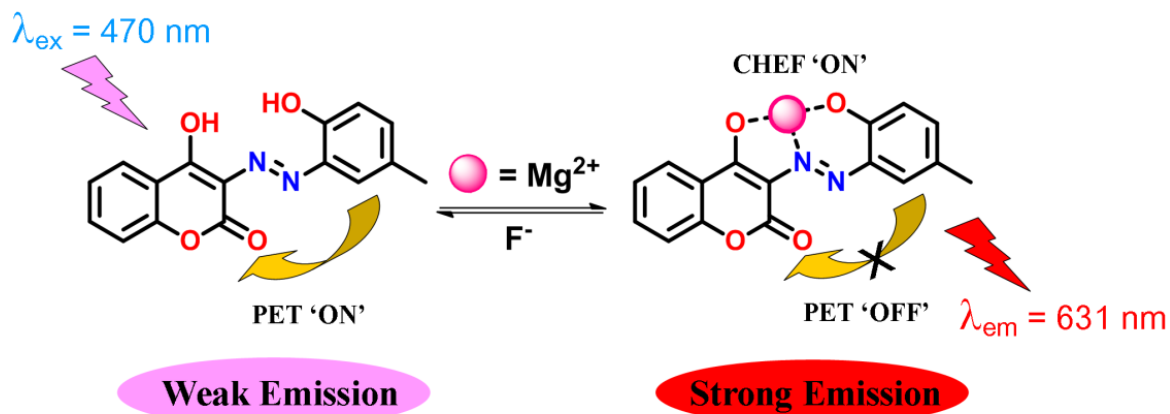
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GRAPHICAL ABSTRACT

Coumarin based azo-phenol chemosensor for selective detection of Mg^{2+} has been synthesized and characterized. An almost 16 fold enhancement of emission intensity has been observed upon gradual addition of Mg^{2+} in DMSO:H₂O (1:5 v/v) medium and has no significant effect even in presence of other metal ions. The emission intensity of the L- Mg^{2+} complex has almost quenched on gradual addition of F^- . The limit of detections for both Mg^{2+} and F^- are in order of 10^{-8} M, hence the newly developed receptor is highly efficient in detecting Mg^{2+} and F^- in very minute levels. The chemosensor can even detect Mg^{2+} in the intracellular region of human lung cancer cells.



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