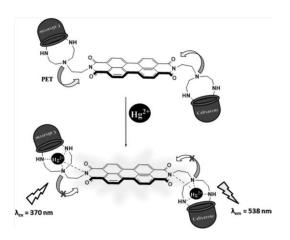
## Synthesis a new fluorescent biosensor for $Hg^{2+}$ by using perylene bisimide derivative containing calix[4]arene units (PB-CX[4])

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The sensing and recognition of the biologically and environmentally important metal ions has emerged as a significant goal in the field of chemical sensors. In that study, we have designed and synthesized a new perylene bisimide derivative containing calix[4]arene units(PB-CX[4]) as "turn on" fluorescent sensor for  $Hg^{2+}$  ion determination. PB-CX[4] showed highly selective and sensitive "turn-on" fluorescent responses toward  $Hg^{2+}$  ion based on photoinduced electron transfer(PET) mechanism in DMF/H<sub>2</sub>O (v/v, 95/5). The binding analysis using a Job plot suggested that PB-CX[4]formed a 1:2 complex with  $Hg^{2+}$ . The association constant (K) of PB-CX[4]– $Hg^{2+}$ complex was found to be  $1.66 \times 10^9 \ M^{-2}$ , with a detection limit of  $5.56 \times 10^{-7} \ M$ . In addition, possible utilization of PB-CX[4]as bio-imaging fluorescent probe to detect  $Hg^{2+}$ in human colon cancer cell lines was also observed by confocal fluorescence microscopy.



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