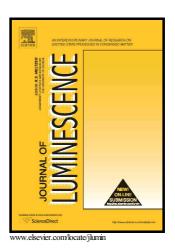
Author's Accepted Manuscript

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PII: S0022-2313(18)30362-4

DOI: https://doi.org/10.1016/j.jlumin.2018.06.054

Reference: LUMIN15716

To appear in: Journal of Luminescence

Received date: 24 February 2018 Revised date: 25 May 2018 Accepted date: 17 June 2018

Cite this article as: Li-Na Liu, Hui Tao, Guo Chen, Yong Chen and Qian-Yong Cao, An amphiphilic pyrene-based probe for multiple channel sensing of mercury ions, *Journal of Luminescence*, https://doi.org/10.1016/j.jlumin.2018.06.054

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ACCEPTED MANUSCRIPT

An amphiphilic pyrene-based probe for multiple channel sensing of mercury ions

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Abstract: An amphiphilic probe bearing a pyrene fluorophore and a hydrophobic cetyl chain has been synthesized by click reaction. The fluorescence recognition properties of the probe toward Hg^{2+} in DMF solution, in aqueous solution and in gel state were detailedly investigated. In DMF solution, the soluble probe shows a pyrene-based monomer emission, and binds with Hg^{2+} in a 1:1 stoichiometry with the fluorescence a turn-off response. The probe can self assemble nonoaggregates with showing both pyrene-based monomer and excimer emissions in aqueous solution. The formed nonoaggregates can be enhanced upon binding with Hg^{2+} , which leads the monomer emission largely quenching, but the excimer emission a little change. It also found that the probe in aqueous solution shows more sensitive toward Hg^{2+} than that in DMF solution. Furthermore, the probe can form fluorescent organic gels in some organic solvents, and the gels were collapsed with only addition of Hg^{2+} . For biological application, the probe was successfully used for fluorescence imaging of intracellular Hg^{2+} .

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