

5th International Conference and Exhibition on Analytical & Bioanalytical Techniques

August 18-20, 2014 DoubleTree by Hilton Beijing, China

Fluorescence switch for selectively sensing copper (II) and L-Histidine *in vitro* and in living cells

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Herein, we report the development of a new fluorescence switch for selectively sensing Cu^{2+} and L-Histidine (L-His) *in vitro* and in living cells for the first time. In the absence of metal ions, Ac-SAACQ-Gly-Gly-Gly-Lys (FITC) (1) exhibits comparable fluorescence to that of free FITC. In the presence of metal ions, 1 selectively coordinates with Cu^{2+} , causing its fluorescence emission quenched via photoinduced electron transfer. Interestingly, as-formed 1- Cu^{2+} complex selectively responds to L-His among the 20 natural amino acids by turning its fluorescence on. This property of fluorescence switch of 1 was successfully applied to qualitatively and quantitatively sensing Cu^{2+} and L-His *in vitro*. Using this dual functional probe, we also sequentially imaged Cu^{2+} and L-His in living HepG2 cells. The new probe 1 could be applied for not only environment monitoring or biomolecule detections, but also disease diagnoses in the near future.

Biography

Gaolin Liang is full Professor at University of Science and Technology of China since March 2010. He received his BS from Nanjing University in 1993, MS from Zhengzhou University in 2002, and PhD from Fudan University in 2005. From 2005 to 2008, he was a postdoctoral fellow at The Hong Kong University of Science and Technology under the supervision of Professor Bing Xu. From 2008 to 2010, he was a postdoctoral fellow at Stanford University under the supervision of Professor Jianghong Rao. His research interests mainly focus on nanochemistry, molecular and cellular imaging, and biomedical analysis.

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