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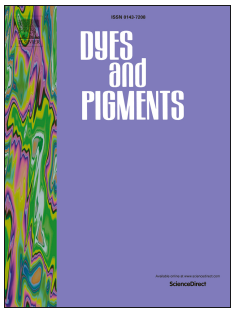

4-(4,5-Diphenyl-1*H*-imidazole-2-yl)-*N*,*N*-dimethylaniline-Cu(II) complex, a highly selective probe for glutathione sensing in water-acetonitrile mixtures

Hazem Essam Okda, Sameh El Sayed, Rosa C.M. Ferreira, Susana P.G. Costa, M.Manuela M. Raposo, Ramón Martínez-Máñez, Félix Sancenón

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4-(4,5-Diphenyl-1*H*-imidazol-2-yl)-*N*,*N*-dimethylaniline-Cu(II) complex, a highly selective probe for glutathione sensing in water-acetonitrile mixtures

Hazem Essam Okda,[a,b,c] Sameh El Sayed,[a,b,c] Rosa C. M. Ferreira,[d] Susana P. G. Costa,[d] M. Manuela M. Raposo,[d]* Ramón Martínez-Máñez,[a,b,c]* and Félix Sancenón[a,b,c]

[a] Instituto Interuniversitario de Investigación de Reconocimiento Molecular y Desarrollo Tecnológico (IDM), Universitat Politècnica de València, Universitat de València. Spain. E-mail: rmaez@qim.upv.es

[b] Departamento de Química, Universitat Politècnica de València. Camino de Vera s/n, 46022, València, Spain.

[c] CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN).

[d] Centro de Química, Universidade do Minho, Campus de Gualtar, 4710-057, Braga, Portugal. E-mail: mfox@quimica.uminho.pt

Abstract

The imidazole derivative 4-(4,5-diphenyl-1*H*-imidazol-2-yl)-*N*,*N*-dimethylaniline (probe **1**) formed a highly coloured and non-emissive 1:1 stoichiometry complex with Cu(II) in water-acetonitrile 1:1 (v/v) solutions. Among all the amino acids (Lys, Val, Gln, Leu, His, Thr, Trp, Gly, Phe, Arg, Ile, Met, Ser, Ala, Pro, Tyr, Gly, Asn, Asp, Glu, Cys and Hcy) and tripeptides (GSH) tested only GSH induced the bleaching of the **1**·Cu(II) solution together with a marked emission enhancement at 411 nm (excitation at 320 nm). These chromo-fluorogenic changes were ascribed to a selective GSH-induced demetallation of the **1**·Cu(II) complex that resulted in a recovery of the spectroscopic features of probe **1**. In addition to the remarkable selectivity of **1**·Cu(II) complex toward GSH a competitive limit of detection as low as 2 μM was determined using fluorescence measurements.