Barbiturate and Naphthalimide Based Fluorescent Molecular Receptors Dedicated to Atrazine and Melamine Sensing

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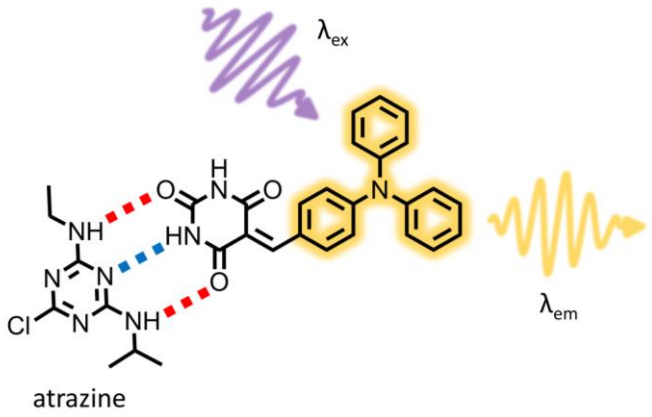
Detection and quantification of pollutants in soils and water sources are major social and environmental issues. Among all the compounds available, 1,3,5-triazine derivatives form a large panel of chemicals utilized in the intensive farming and food industry. For example, atrazine has been extensively used as herbicides and pesticides over the past five decades. Despite its banning in the European Union in 2003 it is still in use in numerous country around the world and it is widely present in the environment due to its remarkable stability in soil and water. These compounds as well as their degradation products are highly toxic and potentially endocrine disruptor and carcinogenic.[1] On another hand, melamine derivatives are also implicated in fraud in the food industry where they were added to artificially increase the apparent protein percentage leading to serious public health hazard.[2]



The development of fluorescent probes dedicated to neutral species is still a challenge. Indeed, these molecules have to combine two properties: selective analyte recognition and significant fluorescence changes upon binding. We developed new charge-transfer type fluorophores with an acceptor–donor–acceptor (ADA) moiety in order to recognize analytes through the formation of three cooperative hydrogen bonds. Barbiturate derivatives and naphthalimide probes were synthesized and their photophysical properties were determined.[3] Then, interaction and detection toward 1,3,5-triazine derivatives have been monitored by UV-visible and fluorescence spectroscopy.

1. Report of OPECST n° 2152 (2002-2003).
2. Y. Li, J. Y. Xu and C. Y. Sun, *RSC Adv.* **2015**, *5*, 1125–1147.
3. C. Remy; C. Allain and I. Leray, *Photochem. Photobiol. Sci.* **2017**, doi: 10.1039/C6PP00372A.