

Rhodol Derivatives as Selective Fluorescent Probes for the Detection of Hg^{II} Ions and the Bioimaging of Hypochlorous Acid



The group of Professor Keith Man-Chung Wong



Invited for this month's cover picture is the group of Professor Keith Man-Chung Wong from the Southern University of Science and Technology (P.R. China). The cover picture illustrates a novel rhodol-based fluorescence probe from the structural combination of rhodamine and fluorescein motifs. Read the full text of their Full Paper at 10.1002/open.201700154.

In one phrase, how would you describe your research?

"Development of novel fluorescence probes".

What is the most significant result of this study?

The significant result of this study is mainly the design and synthesis of a new kind of fluorescent probe, from the structural combination of two fluorescent dyes (i.e. rhodamine and fluorescein), as a rhodol derivative. The molecular structure of the compound consisting of alternating three benzene and two pyran rings fused together to form a backbone on its own is of interest. Drastic color change and emission enhancement could result from the ring-opening process on the spiro-ring. In addition, modification of the functional group on the spiro-ring endows the selective sensing properties towards mercury(II) and hypochlorite ions, leading to a novel selective fluorescent probe. The ability to show cell imaging in the presence of HOCl has also been demonstrated at physiological pH.

How did the collaboration on this project start?

After finishing the synthesis, photophysical, and chemosensing measurements, we wanted to test the potential application of these new compounds in biological systems. We have been seeking for collaboration with my colleague, Prof. Yu Chung Tse in the Department of Biology, and his contribution on this work was in the biological study of cell imaging.

What other topics are you working on at the moment?

My research also focuses on the development of new molecular hybrids from the rhodamine derivatives and luminescent transition-metal complexes. The combination of organic dyes and coordination compounds is anticipated to offer the synergism in such a way that their corresponding advantages could be complementary and cooperative.

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