

Invited Lecture

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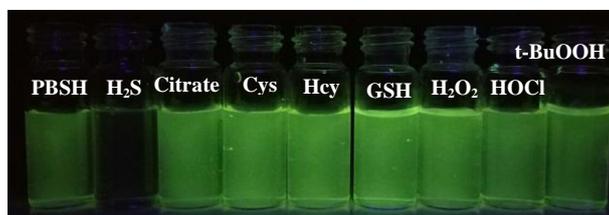
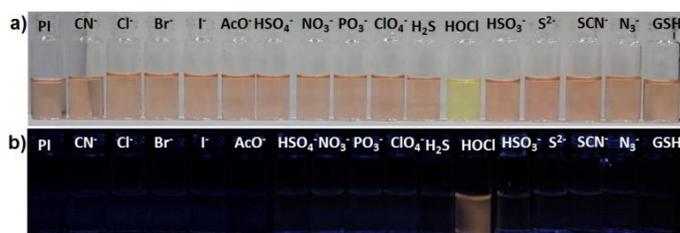
Ultra-sensitive AIE based Sensors for endogenous detection of Reactive Oxygen and Reactive Sulphur Species

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The homeostasis of short-lived reactive species such as H₂S/HOCl in biological systems is essential for maintaining intercellular balance. A typical unpleasant rotten egg smell is the odour characteristic of hydrogen sulfide (H₂S), a compound commonly found in terrestrial and biological ecosystems. An exact redox balance between ROS (Reactive Oxygen Species) and RSS (Reactive Sulphur Species) is essential for the active maintenance of cellular processes such as cell proliferation, differentiation and apoptosis. H₂S is an RSS as well as a reducing agent. Therefore, any imbalance in biological H₂S levels is detrimental to the immunological well-being of organisms. H₂S is known as the third most abundant gas-transmitter following nitrous oxide (NO) and carbon monoxide (CO). Apart from biological applications, there is widespread use of H₂S in industries such as in the production of elemental sulfur and sulfuric acid. Hypochlorous acid (HOCl) is a ROS of notable interest. HOCl fascinates the interest of scientists because of its vital role in pathophysiological processes. Endogenous HOCl is an effective natural oxidant so it can react with proteins, DNA, RNA, fatty acids, and cholesterol and is thought to play vital roles in living systems. There is a growing need to develop molecular probes for the qualitative and quantitative detection of H₂S and HOCl at the macro and microscopic levels. In this lecture some of the recent probes developed by our group for the endogenous and exogenous detection of ROS and RSS will be discussed.



References

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Bio Sketch of Dr.S.Velmathi

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Dr. S. Velmathi received her PhD degree in Organic Chemistry from the University of Madras in the year 2001. After her Ph.D she received Post-Doctoral Fellowship from AIST, Japan and worked for three years at National Institute of Advanced Industrial science and Technology, AIST, Tsukuba, Japan. Currently, she is a Professor in the Department of Chemistry (Organic and Polymer Synthesis Laboratory), National Institute of Technology, Trichy. She holds visiting professorship in institutes like National Institute of Materials Science, Japan, Dong A University, Busan, South Korea, National Chiao Tung University, Taiwan and University of Connecticut USA. She received the prestigious **Tamil Nadu Young Women Scientist Award-2012** for Chemical Sciences. Also selected to receive the **INSA Bilateral Exchange Fellowship-2015**. She is an elected **Fellow of Royal Society of Chemistry** and **Fellow of Tamil Nadu Academy of Sciences, Chennai**. Her major research areas of interest are chemo sensors, asymmetric synthesis and catalysis. To her credit she has published 140 papers in highly reputed international journals. She has delivered invited lectures in many national and international conferences. She has received funding from various funding agencies like DST, DRDO, CSIR. So far 9 Ph.D 2, Post Docs and 45 Masters Students have graduated under her guidance and currently 8 scholars are doing their Ph.D degree under her supervision. She is a member of American Chemical Society, Royal Society of Chemistry, Life member in Chemical Research Society of India, Catalysis Society of India, and Materials Research Society of India.