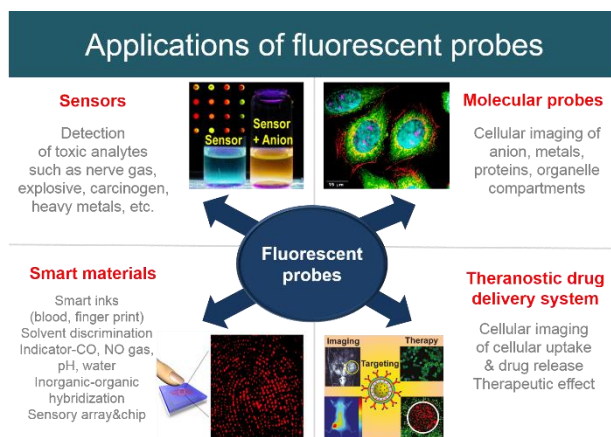


Development of fluorescent probes for bioactive species and their applications in vitro

Min Hee Lee

Department of Chemistry, Sookmyung Women's University, Seoul 140-742, Korea

The development of selective and sensitive methods for the image of bioactive species *in vitro* has been received considerable attention. Specially, we design and synthesize small fluorescent molecules that can give fluorescence and color changes to specific molecules and microenvironments in environmental and biological conditions. The targeted species includes toxic metal ions, carcinogens, and various bioactive species like redox components, disease-associated proteins, etc., in solution and cells. The microenvironments are associated with pH, polarity, viscosity, etc., in a variety of conditions. We also study a multi-component synthetic strategy that allows for the direct, fluorescence-based monitoring of the targeted cellular uptake, or release of a conjugated therapeutic agent. This drug delivery conjugate represents a new approach to so-called theragnostic agent, wherein both a therapeutic effect and drug uptake-related imaging information are produced and can be readily monitored at the sub-cellular level. In due course, the strategy embodied in conjugates could allow for more precise monitoring of dosage levels, as well as an improved understanding of cellular uptake and release mechanisms.



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