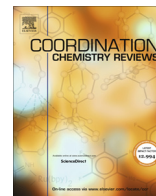




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Preface

Fluorescent probes containing metal ion as a guest or host



Metal is the most abundant element on the earth. The refining and use of metals such as copper, iron, and gold highlights the evolution of human civilization. However, there are only a few metal elements in the life system, and the overall content is extremely low. What is more worth thinking about is that metal elements that do not exist in the organism often cause various adverse physiological effects on the organism. The relationship between metals and the occurrence and development of life health and disease has always been one of the research topics in life sciences.

Since the calcium ion fluorescent probe invented by Roger Tsien realized the tracking of calcium ions in cells, fluorescent probes have become a necessary tool to study these trace metal elements related to life functions. Starting from identifying cell signaling molecules such as calcium ions and zinc ions, scientists have gradually developed fluorescent probes that identify toxic heavy metals and transition metals such as mercury, cadmium, and copper. The function of fluorescent probes has gradually expanded from studying the distribution of metal ions in cells to studying the physiological role of metal ions in the living body, and as a tool for disease diagnosis. However, the selectivity of fluorescent probes to metal ions and the physiologically determined sensitivity range have always been challenges in research. To this end, researchers have developed methods to identify metal ions based on coordination,

chemical reactions, or nuclease-catalyzed reactions. In this special issue, we systematically introduce the progress of metal ion fluorescent probes in recent years, including the expansion of metal ion species recognition, the development of new detection technologies such as two-photon technology, AIE and polymer science, and the application of metal complexes in the detection of small biological molecules including biothiols and ROS.

We hope that this special issue can provide a systematic reference for the work progress of fluorescent probe professionals, provide textbook guidance for newcomers who are new to research, and provide technical support for researchers in metal biology field when choosing fluorescent probes and using fluorescent probes.

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