진단감응 로다민 색소센서재료 합성 및 특성 분석

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Synthesis and Properties of Rhodamine Dye Sensor Material toward detection Response

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Abstract

Recently, people have concerned about environmental pollution. This environmental pollution occur due to many reasons such as heavy metal ions and anions. In this regard, many researchers have studied organic materials to monitor above reasons to protect environmental pollution. One of the organic materials for this function is chemosensor. This chemosensor has been studied and reported about monitoring toxic heavy metal ions and anions.

In this study, the dye sensor was designed and synthesized through reaction of Rhodamine 6G and 1,3-Indanedion. this dye sensor selective detected Hg^{2+} metal ions while showing red color absorption and yellowish-green strong fluorescence emission compared to other heavy metal ions such as Cu^{2+}, Hg^{2+}, Ag^{2+}, Zn^{2+}, Fe^{2+} and Fe^{3+}. In this regard, we anticipated that this dye senosr can provide an significant material for monitoring mercury which cause environmental pollution. Thus, We investigated detailed properties of this dye sesnor with using UV-Vis absorption and fluorescent spectrophotometer, Job's plot method for metal binding complex, computational simulated calculation named *Material Studio 4.3 suite* to approach for electron distribution and HOMO/LUMO.

참고문헌

1. Y. K. Yang, K. J. Yook, J. Tae, A Rhodamine-Based Fluorescent and Colorimetric Chemodosimeter for the Rapid Detection of Hg^{2+} Ions in Aqueous Media, *Journal of American Chemical Society,* **127**, 16760-16761(2005).
2. M. Beija, C. A. M. Alfonso, J. M. G. Martinho, Synthesis and applications of Rhodamine derivatives as fluorescent probes, *Chemical Society Reviews*, **38**, 2410-2433(2009).