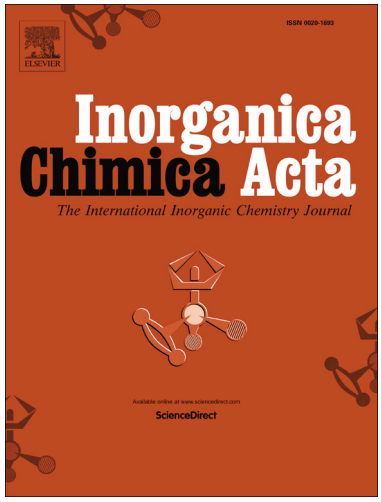

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Recognition of Al^{3+} based on a naphthalene-based "Off-On" chemosensor in near 100% aqueous media

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Abstract: An efficient fluorescent Al^{3+} sensor, 2-hydroxy-1-naphthylaldehyde nicotinoyl hydrazone (HL) has been designed and synthesized. The receptor shows ‘‘off–on’’ fluorescent responses toward Al^{3+} in near 100% aqueous media. other relevant metal ions such as Li^{+}, Na^{+}, K^{+}, Ca^{2+}, Mg^{2+}, Cu^{2+}, Co^{2+}, Mn^{2+}, Ni^{2+}, Zn^{2+}, Ba^{2+}, Fe^{2+}, Cd^{2+}, Hg^{2+}, Pb^{2+}, Sc^{3+}, Fe^{3+}, Cr^{3+} caused almost no fluorescence increase.The reason for this phenomenon is that the addition of Al^{3+} to the solution of HL induce the formation of a 1:1 stoichiometry of the binding mode of L-Al(III) which inhibits the excited-state intramolecular proton transfer (ESIPT) and photoinduced electron transfer (PET). More importantly, the reversibility of the recognition process of HL was performed by adding a Al^{3+} bonding agent Na_2EDTA.

.**Keywords**: naphthalene; fluorescence sensor; Al^{3+}; aqueous media; ESIPT/ PET

1. Introduction

The development of selective and sensitive fluorescent sensor for the detection of metal ions has received more and more attention due to fundamental roles in medicine,