

Naphthalimide-Containing OFF-ON Fluorescent Sensors for Ions with PET Mechanism of Optical Response

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1,8-Naphthalimide derivatives with EDG at the 4-th position of naphthalene ring are well known organic chromophores and fluorophores showing good photostability and strong emission and absorption bands in the visible region. Due to versatile photophysical characteristics, compounds of this type have been successfully used as signaling units for the design of ion-active optical molecular systems.^[1]

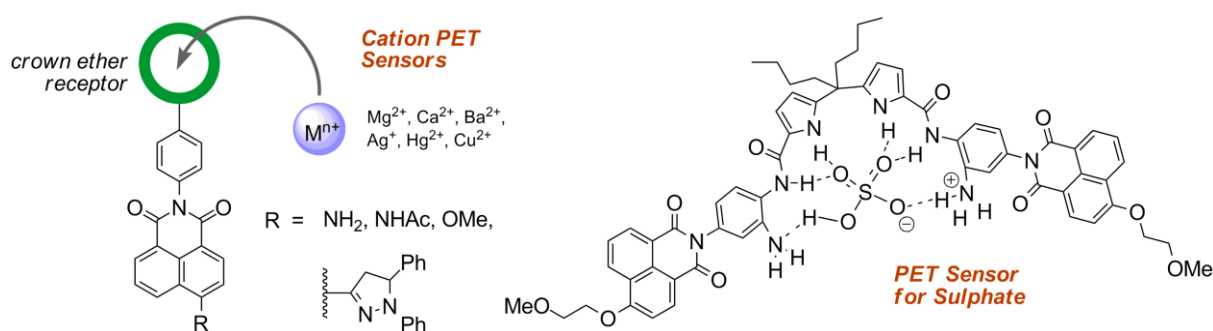


Figure 1. Structure of the studied naphthalimide fluorescent chemosensors

In this report we summarized our recent results in the field of fluorescent sensing of ions using naphthalimide containing PET (Photoinduced Electron Transfer) systems. It has been demonstrated that the presence of benzo-15-crown-5 and *N*-phenylaza-15-crown-5 groups as an *N*-aryl substituent at imide nitrogen results in fluorescent PET sensors for metal cations^[2,3,4,5] whereas the introduction of amidodipyrrole binding motif provides the properties of fluorescent receptor for sulfate in aqueous solution^[6] (Fig. 1). The observed spectral effects induced by the coordination event are analyzed using quantum-chemical calculations, X-Ray data and NMR spectroscopy.

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