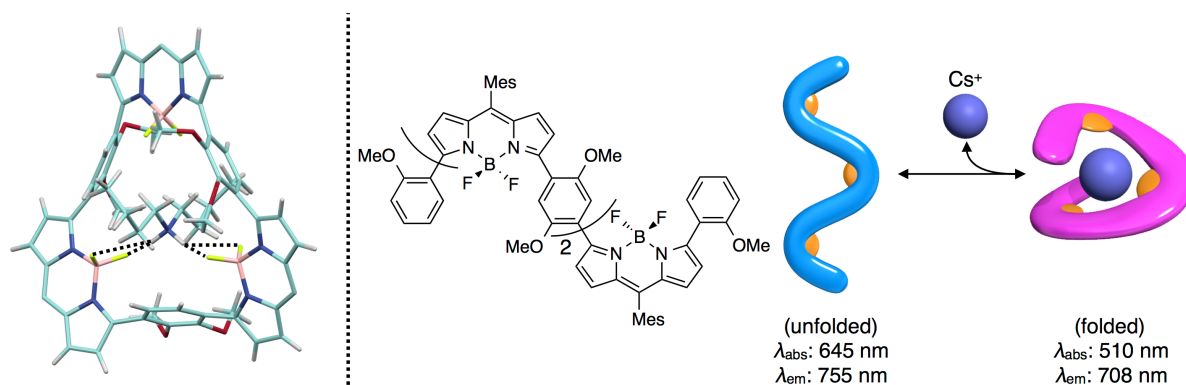


Responsive supramolecules incorporating luminescent dipyrin complexes

• Oligomeric BODIPY hosts utilizing their B–F bonds as recognition units

BODIPYs, boron complexes of dipyrins, exhibit strong fluorescence in the visible region. We focused on the fact that the B–F bond of the BODIPY is polarized and its fluorine atom possesses partial negative charges, and developed host molecules that utilizes BODIPYs as recognition units. A macrocyclic BODIPY trimer with *p*-phenylene linker had a cavity in which the fluorine atoms were accumulated, and it formed a pseudorotaxane by recognizing an axial ammonium guest via the electrostatic interactions and hydrogen bonds. Meanwhile, a linear BODIPY trimer changed its conformation to a helical form upon the interaction with the cations, and accordingly, its absorption and fluorescence were significantly shifted. It can be utilized as a sensor for alkali metal cations such as cesium.

(*Chem. Commun.* **2010**, 46, 6732–6734; *Chem. Commun.* **2012**, 48, 4818–4820)



• Molecular recognition by the aluminum complexes of the N₂O₂-type dipyrin (ALDIPY).

The N₂O₂-type dipyrin ligands were obtained by introducing 2-hydroxyphenyl groups to the α -positions of the dipyrins. Metal complexes and main group element complexes of the N₂O₂ dipyrins exhibited interesting properties depending on the characters of the central elements. Aluminum complexes of the N₂O₂-type dipyrins (ALDIPY) are stable to air and water, and showed strong red fluorescence. The aluminum center adopted octahedral geometry with the N₂O₂ ligand occupying four equatorial positions. This was in sharp contrast to the corresponding boron complex, whose boron center adopted tetrahedral geometry. The phenoxy oxygens of the N₂O₂ complex had partial negative charges. With this feature, the ALDIPY derivatives to which the oxygen atoms were appropriately incorporated worked as selective receptors toward alkaline earth metal ions.

(*Chem. Commun.* **2009**, 2544–2546; *Chem. Commun.* **2016**, 52, 4014–4017)

