SOCIÉTÉ CHIMIQUE DE GENÈVE

Sensing fluoride and cyanide anions in water using main group Lewis acids

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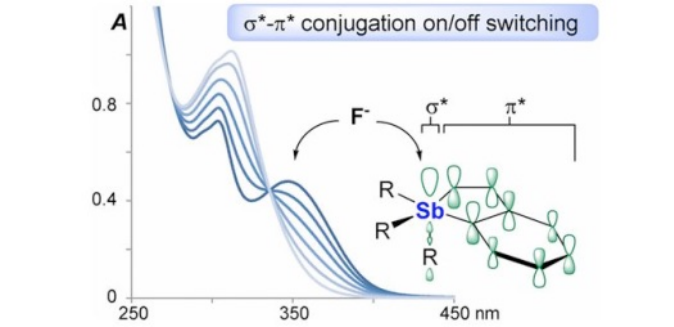
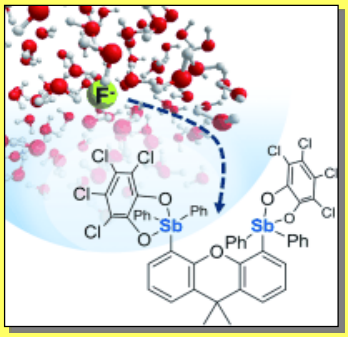
Owing to applications in the sensing of toxic anions such as F- and CN- or in the transport of biologically relevant anions such as Cl-, the development of anion receptors that operate in aqueous media is drawing considerable attention. As part of our contribution to this research, we have designed a series of main group compounds which are sufficiently Lewis acidic to complex anions in water. We have shown that the Lewis acidity of these derivatives can be controlled by the nature of the central main group element employed, the overall charge of compounds and their ability to embrace the anionic guest through the involvement of multiple Lewis acids. While our earlier work focused on the use of boron as a Lewis acidic element, the most recent systems emanating from our efforts all contain heavy group 15 elements, in particular, antimony. We will demonstrate the potential that our approach holds in the areas of anion fluorescence turn-on sensing, chelation, and transport through artificial membranes.





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