COLORIMETRIC SENSING of FLUORIDE ION THROUGH A CHROMOGENIC ANION-*π* INTERACTION **Dr. SAMIT GUHA, FLYNT GOODSON, Prof. SOURAV SAHA***, Department of Chemistry and Biochemistry, Florida State University, 95 Chieftan Way,Tallahassee, Florida 32306, United States, E-mail: saha@chem.fsu.edu; sguha@chem.fsu.edu

Recent discovery of anion–π interaction— a noncovalent interaction between an anion and an electron deficient organic π-system with strong positive quadrupole moment — has added a new dimension to the topical field of anion recognition. We will present a new binding mode of anions through anion–π interaction which is occurring between anions and π* orbital of an electron deficient NDI derivatives. We will report the discovery of a supramolecular interaction (anion-*π* and charge/electron transfer, CT/ET) involving lone pair orbital of fluoride ion and π* orbital of a *π*-electron deficient colorless naphthalene diimide (NDI) receptors. Strong electronic interactions lead to an unprecedented $F^- \rightarrow$NDI ET event, which produces an orange colored $NDI^{\bullet-}$ radical anion. Further reduction of $NDI^{\bullet-}$ by another F^- ion produces a pink colored NDI^{2-} dianion, rendering NDI a colorimetric F^- sensor. Preorganization of two NDI units in overlapping positions using folded linkers improves their selectivity and sensitivity for the F^- ion significantly, allowing F^- detection at nM concentration.