

CHAPTER IV

CONCLUSION

In this work, six novel fluorescent sensors based on conjugated phenyleneethylene containing salicylaldehyde group were prepared via the Sonogashiracoupling reaction. Four of them are based on poly-phenylene ethynylene (PPE I, PPE II, PPE III and PPE IV) and the other two are conjugated small molecules PE I and PE II. The sensing ability of these compounds was examined against common 12 anions including cyanide ion. The fluorescence signals of PPE I and PPE II exhibited small fluorescence “turn-on” response toward only cyanide ion while PPE III and PPE IV remain unchanged.

In case of the small molecules, PE I demonstrated the high sensitivity and selective fluorescence turn-on signal upon the addition of cyanide ion in aqueous media with the detection limit of 2.5 μM level which is below the world regulation. The PE II, on the other hand, gave the lower selectivity as, the fluorescence emission were enhanced with the addition of F^- , OAc^- , SO_3^{2-} , HCO_3^- , and CN^- . However, among halide anions such as F^- , Cl^- , Br^- and I^- , it showed high specificity toward F^- with detection limit of 30 μM . Based on this work, PE I can be used as fluorescent chemo sensor for cyanide ion detection while the PE II can be applied for the discrimination of fluoride ions from other halide ions.

