

Invited Lecture
3rd Asian Conference on Chemosensors and Imaging Probes
(AsianChIP – 2019)

**Unique Feature of Chromophoric Dyads in Recognition of ions and Cell
Imaging Studies**

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The chromophoric dyad systems with suitable receptor sites hold great promise in achieving good photophysical properties and may be explored for the detection of ions and biomolecules in solution and biological medium. The optical behavior of dyads can be selectively tuned in the presence of analytes (as chemical inputs) to get good optical signature (output) for the construction of electronic devices such as, logic gates, reusable combinational circuits and security devices like, key-pad lock system. In this connection recently we have developed some good chromophoric dyad systems based on anthracene (AN) and 1,8-naphthalimide (NPI) chromophoric moieties together or with some other entities. The conjugation of AN and NPI chromophore have been explored because of their known stable photophysical properties with good quantum yield. The developed systems have shown good optical properties based on different photophysical mechanism and biocompatibility to detect ions in solution as well as in live cells. Most of the studied systems have displayed fluorescence “turn-on” behavior upon interaction with tested ions. The optical properties of these systems have been explored to mimic electronic devices upon providing suitable chemical inputs.

References:

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- (2) Srivastava, P.; Razi, S. S.; Ali, R.; Gupta, R. C.; Yadav, S. S.; Narayan, G.; Misra, A. *Anal. Chem.* **2014**, *86*, 8693–8699.
- (3) Misra, A.; Shahid, M.; Srivastava, P. *Sens Actuators B* **2012**, *169*, 327–340.
- (4) Dwivedi, S. K.; Gupta, R. C.; Ali, R.; Razi, S. S.; Hira, S. K.; Manna, P. P.; Misra, A. *J. Photochem. Photobiol., A* **2018**, *358*, 157–166.

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Arvind Misra is presently working as a Professor in Department of Chemistry, Institute of Science, Banaras Hindu University Varanasi, UP India. He obtained his Ph.D. degree in 2001 from University of Allahabad, Allahabad. His current research interest entails toward design and development of some efficient organic functional materials, optoelectronic materials and their applications in cell imaging and recognition of ions and biomolecules under physiological conditions and in live cell. He is a member of National Academy of Sciences, (NASI), Allahabad; Chemical Research Society of India, Bangalore; Society of Material Chemistry, BARC (SMC-INDIA); International Academy of Physical Sciences, Allahabad; and American Chemical Society, USA. His name is also among the potential reviewers of many international and national journals.

Representative Publications:

- (1) Dual Fluorophore Containing Efficient Photoinduced Electron Transfer Based Molecular Probe for Selective Detection of Cr^{3+} and PO_4^{3-} Ions through Fluorescence “Turn-On-Off” Response in Partial Aqueous and Biological Medium: Live Cell Imaging and Logic Application, Dwivedi, S. K.; Gupta, R. C.; Srivastava, P.; Singh, P.; Koch, B.; Maiti, B.; Misra, A. *Anal. Chem.* **2018**, *90*, 10974–10981.
- (2) Selective Naked-Eye Detection of Hg^{2+} through an Efficient Turn-On Photoinduced Electron Transfer Fluorescent Probe and Its Real Applications, Srivastava, P.; Razi, S. S.; Ali, R.; Gupta, R. C.; Yadav, S. S.; Narayan, G.; Misra, A. *Anal. Chem.* **2014**, *86*, 8693–8699.
- (3) Optoelectronic behavior of bischromophoric dyads exhibiting $\text{Zn}^{2+}/\text{F}^-$ ions induced “turn-On/Off” fluorescence, Misra, A.; Shahid, M.; Srivastava, P. *Sens Actuators B* **2012**, *169*, 327–340.
- (4) Smart PET based organic scaffold exhibiting bright “Turn-On” green fluorescence to detect Fe^{3+} ion: Live cell imaging and logic implication Dwivedi, S. K.; Gupta, R. C.; Ali, R.; Razi, S. S.; Hira, S. K.; Manna, P. P.; Misra, A. *J. Photochem. Photobiol., A* **2018**, *358*, 157–166.
- (5) Highly sensitive cell imaging “Off-On” fluorescent probe for mitochondria and ATP Priyanka Srivastava, Razi, S. S.; Ali, R.; Srivastav, S.; Patnaik, S.; Srikrishna, S.; Misra, A. *Biosens Bioelectronics* **2015**, *69*, 179–185.