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Akhtar H. Malik, PhD

Education

Indian Institute of Technology, **Guwahati**, India. *Aug.' 12 - Nov.' 17*
Doctor of Philosophy, Material Chemistry.

Aligarh Muslim University, Aligarh, India. *July' 10 - July' 12*
Masters of Science, Organic Chemistry.
Grade: Excellent.

Aligarh Muslim University, Aligarh, India. *July' 07 - July' 10*
Bachelors of Science, Chemistry.
Grade: First Class.

Research and Professional Experience

Asst. Professor in Chemistry, Govt. Degree College Sopore, Kashmir, India *2017 – present*

PhD Research *Aug' 12 - Nov' 17*

Design and development of fluorescent based water soluble conjugated polymers for optical and electrical based detection of Explosive Materials, Environmental Contaminants, Biological Molecules, Latent Fingerprints, Bacterial Detection, Metal ions and Cancer Biomarkers. Polymer based semiconducting resistive devices for Explosive, Ammonia, and Nerve gas Sensing. Designing new materials (small molecule based) for Invisible ink and Anti-counterfeiting technology. **Supervisor***: Prof. Parameswar K. Iyer*

Publications

Malik, A. H.; Zehra, N.; Ahmad, M.; Parui, R.; Iyer, P. K. Advances in conjugated polymers for visualization of latent fingerprints: A Critical Perspective. *New J. of Chem.* **2020,** 44, 19423-39

Kalita, A.; **Malik, A. H**.; Sarma, N. S., Stimuli-Responsive Naphthalene Diimide as Invisible Ink: A Rewritable Fluorescent Platform for Anti-Counterfeiting. *Chem Asian J*. **2020**, *15*, 1-8.

Zehra, N.; Kalita, A.; **Malik, A. H**.; Barman, U.; Afroz, M. A.; Iyer, P. K. Conjugated Polymer-Based Electrical Sensor for Ultra-trace Vapor Phase Detection of Nerve Agent Mimics. *ACS Sens*. **2020**, *5*, 191-198.

Dutta, P.; Meher, N.; **Malik, A. H**.; Choudhury, B.; Iyer, P. K. Poly uorene Based Bioconjugates for Selective Detection of Ferritin in Normal and Cancer Human Blood Serums. *ACS Appl. Poly. Mater* **2019**, 1, 18-26.

Zehra, N.; Dutta, D.; Malik, A. H.; Ghosh, S. S.; Iyer, P. K. Fluorescence Resonance Energy Transfer-Based Wash-Free Bacterial Imaging and Antibacterial Application Using a Cationic Conjugated Polyelectrolyte. *ACS Appl. Mater. Interfaces* **2018**, *10*, 27603-27611.

Malik, A. H.; Kalita, A.; Iyer, P. K. Development of Well-Preserved, Substrate-Versatile Latent Fingerprints by Aggregation Induced Enhanced Emission-Active Conjugated Polyelectrolyte. *ACS Appl. Mater. Interfaces* **2017**, *9*, 37501-37508.

Malik, A. H.; Iyer, P. K. Conjugated Polyelectrolyte Based Sensitive Detection and Removal of Antibiotics Tetracycline from Water. *ACS Appl. Mater. Interfaces* **2017**, *9*, 4433-4439.

Tanwar, A. S.; Hussain, S.; **Malik, A. H**.; Afroz, M. A.; Iyer, P. K. Inner Filter Effect Based Selective Detection of Nitroexplosive-Picric Acid in Aqueous Solution and Solid Support Using Conjugated Polymer. *ACS Sens*., **2016**, *1*, 1070-1077.

Kalita, A.; Hussain, S.; **Malik, A. H**.; Iyer, P. K. Anion-Exchange Induced Strong π-π Interactions in Single Crystalline Naphthalene Diimide for Nitroexplosive Sensing: An Electronic Prototype for Visual on-Site Detection. *ACS Appl. Mater. Interfaces* **2016**, *8*, 25326-25336.

Malik, A. H.; Hussain, S.; Iyer, P. K. Aggregation-Induced FRET via Polymer Surfactant Complexation: A New Strategy for the Detection of Spermine. *Anal. Chem*., **2016**, *88*, 7358-7364.

Hussain, S.; **Malik, A. H**.; Iyer, P. K. FRET-assisted Label Free Detection and Discrimination of Flavins via Cationic Conjugated Polyelectrolyte Under Physiological Conditions. *J. Mater. Chem. B*, **2016**, *4*, 4439-4446.

Kalita, A., Hussain S., **Malik A.H**., Nimmakayala V. V.Subbarao and Iyer, P.K. Vapor Phase Sensing of Ammonia at Sub-ppm Level using a Perylene Diimide Thin Film Device. *J. Mater. Chem. C* **2015**, *3*, 10767-10774.

Malik, A. H.; Hussain, S.; Kalita, A.; Iyer, P. K., Conjugated polymer nanoparticles for the amplified detection of nitro-explosive picric acid on multiple platforms. *ACS Appl. Mater. Interfaces* **2015**, *7*, 26968-26976.

Hussain, S.; **Malik, A. H**.; Afroz, M. A.; Iyer, P. K., Ultrasensitive detection of nitro explosive-picric acid via conjugated polyelectrolyte in aqueous media and solid support. *Chem. Commun*. **2015**, *51*, 7207-7210.

Malik, A. H.; Hussain, S.; Tanwar, A. S.; Layek, S.; Trivedi, V.; Iyer, P. K., Anionic conjugated polymer as a multi-action sensor for the sensitive detection of $Cu^{2+,}$ PPi, real-time ALP assaying and cell imaging. *Analyst* **2015**, *140*, 4388-4392.

Hussain, S.; **Malik, A. H**.; Iyer, P. K. Highly precise detection, discrimination, and removal of anionic surfactants over the full pH range via cationic conjugated polymer: An efficient strategy to facilitate illicit-drug analysis. *ACS Appl. Mater. Interfaces* **2015**, *7*, 3189-3198.

Patents, Book Chapters

N. Singh, **A. H. Malik**, P. K. Iyer, S. Patra. Xanthine as a Scafold for Synthesis of Novel Compounds. (TPN- 201631028745).

A. H. Malik, A. Kalita, P. K. Iyer. Method for Development of well Preserved Substrate Versatile Latent Fingerprint and its visualization Using Aggregation Induced Enhance Emission Active Conjugated Polyelectrolyte. (Ref No. 2018031620000301).

N. Zehra, A. Kalita, **A. H. Malik**, P. K. Iyer. Method for the Ultradetection of Nerve Gas Vapors Using Amine Functionalized Conjugated Polymer-Based Electrical Sensor. (Ref No. 2018031620000401).

Book chapter published by Wiley-VCH Verlag GmbH, 2018 on Conjugated Polymers for Biological and Biomedical Applications. **A. H. Malik**, S. Hussain, S. R. Chowdhury, and P. K. Iyer (ISBN 978-3-527-34273-0).

Conference Proceedings

Oral Presentations

Global Research Mind Seminar at Kyushu Institute of Technology Japan, 2016 (Invited).
2nd Indo-Sweden Joint International Workshop at IIT Guwahati, December 2015 (Invited).

Frontiers in Chemical Sciences (FICS 2016) at IIT Guwahati, 08-11 Dec 2016.
4th International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2015) at IIT, Guwahati 08-11 Dec 2015.

Poster presentations

Material Research Society of India (MRSI-2016) at CSIRNEIST, Jorhat, 18-21 Feb 2016.

68th Annual Session of Indian Institute of Chemical Engineers (CHEMCON 2015) at IIT, Guwahati Dec 27-30, 2015.

Annual Chemical Engineering Festival (Re ux 2015) at IIT Guwahati, 27-29 March, 2015 International Symposium on Polymer Science and Technology (MACRO 2015), Indian Association for the Cultivation of Science (IACS), Kolkata, India. 23-26 January, 2015.

Awards & Achievements

Best Poster award in Research Conclave 2017 organized by Academic A airs Board of Indian Institute of Technology Guwahati.

Best Poster award in Research Conclave 2016 organize by Academic Affairs Board of Indian Institute of Technology Guwahati.

Best Poster Award in Annual Chemical Engineering Festival "Reflux 2015" organised by the Department of Chemical Engineering, IIT Guwahati, India.

Junior Research Fellowship and Eligibility for Lectureship (CSIR JRF-NET), awarded by Council of Scientific & Industrial Research and University Grant Commission, India, Dec-2013. Qualified Graduate Aptitude Test in Engineering (GATE), conducted by Department of Science and Technology, Ministry of Human Resource Development, Government of India, 2013. Awarded University Merit Scholarship on the basis of Departmental Competitive Test held at Department of Chemistry Aligarh Muslim University, 2011.

Extra Interests

Hobbies Swimming, Cycling, Storytelling, Travelling, Cooking, Exploring cultures.
Literary Interests: Human History, Magical Realism, Science Fiction.

References

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