

CURRICULUM VITAE

ABHIJIT PATRA

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PROFESSIONAL EXPERIENCE:

- April, 2018 – present **Associate Professor**, Department of Chemistry, Indian Institute of Science, Education and Research, Bhopal (IISERB), Bhopal, India
- July, 2012 – March, 2018 **Assistant Professor**, Department of Chemistry, Indian Institute of Science, Education and Research, Bhopal (IISERB), Bhopal, India
- September, 2010 – June, 2012 **Alexander von Humboldt fellow**, working on **Polymeric materials**
Host: Prof. U. Scherf
Dept. of Macromolecular Chemistry, University of Wuppertal, Germany
- June, 2009 – June, 2010 **Post-doctoral research** in the area of **Organic Photochromism**
Supervisor: Prof. K. Nakatani
PPSM, Ecole Normale Supérieure de Cachan, UniverSud, Paris, France

ACADEMIC QUALIFICATIONS:

- 2003 – 2009 **Ph.D. in the general area of Materials Chemistry**
Supervisor: Prof. T. P. Radhakrishnan
School of Chemistry, University of Hyderabad, Hyderabad
- 2001 – 2003 **Master of Science (M.Sc.) in Chemistry**
Burdwan University, West Bengal
Awarded First Class, 78.33%
- 1998 – 2001 **Bachelor of Science (B.Sc.) in Chemistry**
Bankura Christian College, Bankura
Burdwan University, West Bengal
Awarded First Class, 68.75%

ACADEMIC DISTINCTIONS AND FELLOWSHIPS:

- **Alexander von Humboldt Research Fellowship**, awarded June, 2009 in Materials Science; Fellowship period: September, 2010 – June, 2012.
- Qualified UGC-CSIR NET for JRF (2003) and SRF (2005).
- Qualified GATE (2003), Percentile Score: 97.58 & All India Rank: 69.

AWARDS:

- **Young Scientist Award-2008**, Chemistry and Allied Science (Winner trophy) at Dr. K. V. Rao 8th Annual Research Award Program, Hyderabad, India, April, 2008.
- **Best Oral Presentation Award** for the talk on “*Size-dependent Evolution of Optical and Nonlinear Optical Properties in Molecular Nano/microcrystals*” in the 5th Annual in-house Symposium of School of Chemistry (Chemfest-2008), University of Hyderabad, India, March 1-2, 2008.
- **2nd Prize for Poster Presentation** on “*Molecular Nano/microcrystals: Fabrication and Optical Properties*” in the International Conference on Nanoscience and Technology (ICONSAT-2008), Chennai, India, February 27-29, 2008.
- **Best Oral Presentation Award** for the talk on “*Tuning the Size and Optical Properties in Molecular Nano/microcrystals*” at the National Review and Coordination Meeting on Nanoscience and Nanotechnology (NSNT-2007), Hyderabad, India, February 21-23, 2007.

RESEARCH PUBLICATIONS:

From IISERB

27. Bahadur, SK, S. Khodia, A. Patra,* T and V-shaped Donor-Acceptor-Donor Molecules Involving Pyridoquinoxaline: Large Stokes Shift, Environment-sensitive Tunable Emission and Temperature-induced Fluorochromism, *Chem. Commun.*, **2018**, *54*, 1786-1789.
26. P. Pallavi, Bahadur, SK, P. Ahir, A. Patra,* Tuning the Förster Resonance Energy Transfer through a Self-Assembly Approach for Efficient White-Light Emission in an Aqueous Medium, *Chem. Eur. J.* **2018**, *24*, 1151 – 1158.
25. M. W. Hussain, S. Bandyopadhyay, A. Patra,* Microporous Organic Polymers Involving Thiadiazolopyridine for High and Selective Uptake of Greenhouse Gases at Low Pressure, *Chem. Commun.* **2017**, *53*, 10576-10579.

24. Bahadur. SK, P. K. Thakre, R. S. Tomar,* A. Patra,* A pyridoindole based multifunctional bioprobe: pH-induced fluorescence switching and specific targeting of lipid droplets, **2017**, *Chem. Asian J.* **2017**, *12*, 2501-2509 (*inside cover page*).
23. P. Pallavi, S. Bandyopadhyay, J. Louis, A. Deshmukh, A. Patra,* Soluble Conjugated Porous Organic Polymer: Efficient White Light Emission in Solution, Nanoparticles, Gel and Transparent Thin Film, *Chem. Commun.*, **2017**, *53*, 1257-1260.
22. S. Bandyopadhyay, A. G. Anil, A. James, A. Patra,* Multifunctional Porous Organic Polymers: Tuning of Porosity, CO₂, and H₂ Storage and Visible-Light-Driven Photocatalysis, *ACS Appl. Mater. Interfaces*, **2016**, *8*, 27669-27678.
21. A. Deshmukh, S. Bandyopadhyay, A. James, A. Patra,* Trace Level Detection of Nitroanilines by a Solution Processable Fluorescent Porous Organic Polymer, *J. Mater. Chem. C*, **2016**, *6*, 3775-3780.
20. Bahadur Sk, A. Patra,* C-C Coupling Over Schiff Base Condensation: a Rational Design Strategy for a Strongly Fluorescent Molecular Material, *CrystEngComm*, **2016**, *18*, 4290-4294.
19. S. Bandyopadhyay, R. Metivier, P. Pallavi, E. Preis, K. Nakatani, K. Landfester, A. Patra,* U. Scherf, Conjugated Polymer Nanoparticle-Triplet Emitter Hybrids in Aqueous Dispersion: Fabrication and Fluorescence Quenching Behavior, *Macromol. Rapid Commun.*, **2016**, *37*, 271-277.
18. S. Bandyopadhyay, P. Pallavi, A. Anil, A. Patra*, Fabrication of Porous Organic Polymers in the Form of Powder, Soluble in Organic Solvents and Nanoparticles: a Unique Platform for Gas Adsorption and Efficient Chemosensing, *Polym. Chem.*, **2015**, *6*, 3775-3780. (*inside cover page, One of the most downloaded article in the journal in Apr-May, 2015*)
17. S. Samala, **P. Pallavi**, R. Kumar, R. K. Arigela, G. Singh, R. S. Ampapathi, A. Priya, S. Datta, **A. Patra**,* B. Kundu* One-pot Synthesis of Highly Fluorescent Pyrido[1,2-*a*]indole Derivatives via C-H/N-H Activation: Photophysical Investigations and Application in Cell Imaging, *Chem. Eur. J.*, **2014**, *20*, 14344 – 14350.

From Post-Doctoral Research

16. F. G. Erko, J. Berthet, **A. Patra**, R. Guillot, K. Nakatani, R. Métivier, S. Delbaere,* Spectral, Conformational and Photochemical Analyses of Photochromic Dithienylethene: cis-1,2-Dicyano-1,2-bis(2,4,5-trimethyl-3-thienyl)ethene Revisited, *Eur. J. Org. Chem.* **2013**, *34*, 7809-7814.

15. **A. Patra,*** U. Scherf,* Fluorescent Microporous Organic Polymers: Potential Testbed for Optical Applications, *Chem. Eur. J.*, **2012**, *18*, 10074-10080.
14. **A. Patra,*** R. Métivier,* F. Brisset, K. Nakatani, Photochromic One-Dimensional Nanostructures Based on Dithienylethene: Fabrication by Light Induced Precipitation and Reversible Transformation in the Nanoparticle State, *Chem. Commun.*, **2012**, *48*, 2489-2491 (*inside cover page*).
13. J. Koenen, S. Jung, **A. Patra**, A. Helfer, U. Scherf,* Dye-terminated, Hyperbranched Polytruxenes and Polytruxene-b-polythiophene Multiblock Copolymers Made in an “AB₂+A” Approach, *Adv. Mater.*, **2012**, *24*, 681-686.
12. L. Liu, **A. Patra**, U. Scherf, T. Kissel,* Polyfluorene Nanoparticles Coated with Folate-Conjugated Triblock Co-polymer: Effective Agents for Targeted Cell Imaging, *Macromol. Biosci.*, **2012**, *12*, 1384-1390.
11. **A. Patra,*** J. Koenen, U. Scherf, Fluorescent Nanoparticles Based on Microporous Organic Polymer Network: Fabrication and Efficient Energy Transfer to Surface-bound Dyes, *Chem. Commun.*, **2011**, *47*, 9612-9614.
10. **A. Patra**, R. Métivier, J. Piard, K. Nakatani,* SHG-Active Molecular Nanorods with Intermediate Photochromic Properties Compared to Solution and Bulk Solid States, *Chem. Commun.*, **2010**, *46*, 6385-6387.
9. A. Spangenberg, J. A. P. Perez, **A. Patra**, J. Piard, A. Brosseau, R. Métivier* K. Nakatani,* Probing Photochromic Properties by Correlation of UV-Visible and Infra-Red Absorption Spectroscopy: A Case Study with *Cis*-1,2-dicyano-1,2-bis(2,4,5-trimethyl-3-thienyl)ethene, *Photochem. Photobiol. Sci.*, **2010**, *9*, 188-193.

From Doctoral Research

8. **A. Patra,*** Ch. G. Chandaluri, T. P. Radhakrishnan,* Optical Materials Based on Molecular Nanoparticles, *Nanoscale*, **2012**, *4*, 343-359 (*Review article*).
7. Ch. G. Chandaluri, **A. Patra**, T. P. Radhakrishnan,* Polyelectrolyte-Assisted Formation of Molecular Nanoparticles Exhibiting Strongly Enhanced Fluorescence, *Chem. Eur. J.*, **2010**, *16*, 8699-8706.
6. **A. Patra**, T. P. Radhakrishnan,* Molecular Materials with Contrasting Optical Responses from a Single Pot Reaction and Fluorescence Switching in a Carbon Acid, *Chem. Eur. J.*, **2009**, *15*, 2792-2800.
5. **A. Patra**, N. Venkatram, D. N. Rao, T. P. Radhakrishnan,* Optical Limiting in Organic Molecular Nano/microcrystals: Nonlinear Optical Effects Dependent on Size Distribution, *J. Phys. Chem. C*, **2008**, *112*, 16269-16274.

4. **A. Patra**, K. Rajesh, T. P. Radhakrishnan,* Optical Materials Based on Molecular Nano/microcrystals and Ultrathin Films, *Bull. Mater. Sci.*, **2008**, *31*, 421-427.
3. **A. Patra**, N. Hebalkar, B. Sreedhar, T. P. Radhakrishnan,* Formation and Growth of Molecular Nanocrystals Probed by their Optical Properties, *J. Phys. Chem. C*, **2007**, *111*, 16184-16191.
2. **A. Patra**, S. P. Anthony, T. P. Radhakrishnan,* Tris(4-cyanophenyl)amine: Simple Synthesis via Self-assembly and Strong Fluorescence in Solution, Nano/microcrystals and Solid, *Adv. Funct. Mater.*, **2007**, *17*, 2077-2084.
1. **A. Patra**, N. Hebalkar, B. Sreedhar, M. Sarkar, A. Samanta, T. P. Radhakrishnan,* Tuning the Size and Optical Properties in Molecular Nano/microcrystals: Manifestation of Hierarchical Interactions, *Small*, **2006**, *2*, 650-659.

Promotion of Science and Education:

- Invited talk in The Science Summer Camp under the **INSPIRE** Internship Scheme, sponsored by the Department of Science and Technology (DST), Gyan Ganga Institute of Technology & Management, Bhopal, June 20, 2014.
- ‘It’s A Small World’, invited presentation (popular talk for 11th Std. students for the promotion of Science) under the **INSPIRE** program, sponsored by the Department of Science and Technology (DST), Patna Science College, Patna University, August 28, 2012.

Invited Lectures:

- ‘Multifunctional Porous Organic Polymers’, Inter-IISER Chemistry Meet 2017 (IICM 2017), January, 2017, IISER Bhopal
- ‘Tetraphenylcyclopentadiene based Soluble, Fluorescent, Porous Organic Polymers: A Potential Testbed for Gas Adsorption and Chemosensing’ Challenges in Organic Materials and Supramolecular Chemistry (ISACS18), IISc, Bangalore, India, November, 2015
- ‘Functional Molecules, Polymers and Polymer-derived Nanostructures’, Emerging Trends in Chemical Sciences, June, 2015, IISER Bhopal
- ‘Functional Polymeric Nanostructures: Fabrication and Light Emission Properties’, One-day conference in AISECT University, February, 2014, Bhopal

No of students:

BSMS: 10 (completed), 4 (continuing)

Ph.D.: 7 (1 completed, 3 SRF, 3 JRF), **PDF:** 2 (DST)

List of Projects implemented:

1. Project title: Multifunctional Conjugated Porous Organic Polymers: Emerging Materials for Light Harvesting, Photocatalysis and Energy Storage, Funding agency: DST, Total amount sanctioned: Rs. 55.5 Lakh, Duration: 19/03/2018 - 19/03/2021

2. Project title: Fluorescent Microporous Organic Polymers: Fabrication and Tuning the Optical Properties Funding agency: DST, Total amount sanctioned: Rs. 25 Lakh, Duration: 30/05/2014 - 30/05/2017

3. Project title: Exploration of Novel Aggregation Induced Emissive Molecules, Polymers and Nanoassemblies, Funding agency: DAE, Total amount sanctioned: Rs. 26,67,600 Lakh, Duration: 08/08/2016 - 08/08/2019

4. Project title: Stimuli-responsive Multifunctional Polymeric Micelles: Potential Scaffold for Drug Loading, Sensing and Light Harvesting, Funding agency: CSIR, Total amount sanctioned: Rs. 9,00,000 Lakh
