Curriculum Vitae

Dr. Sanjoy Mondal, *Ph.D.*

Personal Details

- Date of Birth : 12th April, 1989
- Sex : Male
- Nationality : Indian
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Current Affiliation:

Assistant Professor, Department of Chemistry, Sarat Centenary College,
Dhaniakhali, Hooghly, WB, India

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Education & Career

- **Post-Doc.** (Aug'2017 - Oct'2020) Electronic Functional Materials Group, National Institute for Materials Science (NIMS), Japan. Supervisor: *Dr. Masayoshi Higuchi*
- **Ph.D.** (2012-2016): Indian Association for the Cultivation of Science (IACS), Kolkata, India, *Thesis topic "Facile Preparation of Polyaniline Nanostructures and their Applications."* Supervisor: Dr. Sudip Malik
- **M.Sc.** (2009-2011): Chemistry, Indian Institute of Technology (IIT), Delhi, New Delhi, India
- **B. Sc.** (2006-2009): The University of Burdwan, West Bengal, India, (*Chemistry Honors)*

Current Research Interest

- Metallo-supramolecular Polymer for Electrochromic applications.
- Metallo-supramolecular Polymer for real smart energy saving window fabrication
- Conjugated polymers for energy storage applications

Fellowships & Awards

- Qualified NET 2012 with CSIR rank 39 (AIR)/ (JRF & SRF) award 2012- 2016
- Qualified Graduate Aptitude Test in Engineering (**GATE**) examination (2011)
- **Best Poster Award** in "*3rd FAPS POLYMER CONGRESS and MACRO-2013*", IISc. Bangalore, India, May 15-18.

List of Publications Citation >625 H-index: 10

Book Chapter

1) U. Rana, Sanjoy Mondal and S. Malik, *Conjugated Polymer Nanostructure: Synthesis and Application, Pan Stanford Publishing Pte. Ltd*., ISBN: 978-1-315-22962-1.
2) Sanjoy Mondal*, U. Rana *Polyaniline Nanostructures for Energy Storage Applications. Arcler Publishing House, Canada*, ISBN: 978-1-77361-539-4.
3) S. Dhibar, P. Das, Sanjoy Mondal, U. Rana, S. Malik, *Conjugated Polymer Based Nanocomposites as Electrode Materials*. Wiley-VCH, 2021
4) Sanjoy Mondal*, *Graphene-based Materials for Energy Storage Aplications, Arcler Publishing House, Canada (submitted)*

Papers

1. Sanjoy Mondal, D. C. Santra, Y. Ninomiya, T. Yoshida, and M. Higuchi, *Dual-Redox System of Metallo-Supramolecular Polymers for Visible-to-Near-IR Modulable Electrochromism and Durable Device Fabrication*, *ACS Appl. Mater. Interfaces* **2020**, 12, 58277–58286, ISSN:1944-8252 (**IF= 8.75**).

2. Sanjoy Mondal, Y. Ninomiya, T. Yoshida, T. Mori, M. K. Bera, K. Ariga, and M. Higuchi, *Dual-Branched Dense Hexagonal Fe(II)-Based Coordination Nanosheets with Red-to-Colorless Electrochromism and Durable Device Fabrication*, *ACS Appl. Mater. Interfaces* **2020**, 12, 31896–31903. ISSN: 1944-8252 (**IF= 8.75**).

3. Sanjoy Mondal, T. Yoshida, S. Maji, K. Ariga, and M. Higuchi, *Transparent Supercapacitor Display with Redox-Active Metallo-Supramolecular Polymer Films*, *ACS Appl. Mater. Interfaces* **2020**, *12*, 16342−16349. ISSN: 1944-8252 (**IF=8.75**).

4. Sanjoy Mondal, Y. Ninomiya, and M. Higuchi, *Durable Supercapattery Film with Dual-Branched Dense Hexagonal Fe(II)-Based Coordination Nanosheets for Flexible Power Sources*, *ACS Appl. Energy Mater.* **2020**, 3, 10653–10659. ISSN: 2574-0962 (**IF=4.47**).

5. Sanjoy Mondal, U. Rana and S. Malik, *Graphene Quantum Dots doped Polyaniline Nanofiber as High Performance Supercapacitor Electrode Materials*, *Chem. Comm.*, **2015**, *51*, 12365. ISSN: 1364-548X (**IF= 5.99)** (Hot *Chem. Comm*. articles for June).

6. Sanjoy Mondal, U. Rana and S. Malik, *Facile Decoration of Polyaniline Fiber with Ag Nanoparticles for Recyclable SERS Substrate*, *ACS Appl. Mater. Interfaces*, **2015**, *7*, 10457 ISSN: 1944-8252 (**IF=8.75).**

7. Sanjoy Mondal, T. Yoshida, U. Rana, M. K. Bera and Masayoshi Higuchi, *Thermally Stable Electrochromic Devices using Fe(II)-based Metallo-supramolecular Polymer*, *Sol. Energy Mater. Sol. Cells*, **2019**, 200, 110000. ISSN: 0927-0248. (**IF=6.019**).

8. Sanjoy Mondal and Sudip Malik, *Easy Synthesis Approach of Pt-nanoparticles on Polyaniline Surface: An Efficient Electro-catalyst for Methanol Oxidation Reaction*, *J. Power Sources*, **2016**, *328*, 271. ISSN: 0378-7753 (**IF=8.2**).

9. Sanjoy Mondal, U. Rana and Sudip Malik, *Reduced Graphene Oxide/Fe_3O_4/Polyaniline Nanostructures as Electrode Materials for an All-Solid-State Hybrid Supercapacitor*, *J. Phys. Chem. C*, **2017**, *121*, 7573. ISSN: 1932-7455 (**IF=4.18**)

10. Sanjoy Mondal, T. Yoshida, Masayoshi Higuchi, *Electrochromic Devices using Fe(II)-based Metallo-supramolecular Polymer: Introduction of Ionic Liquid as Electrolyte to Enhance the Thermal Stability*, *J. Soc. Inf. Display*, **2019**, *27*, 661–666. ISSN: 1938-3657 (**IF=1.6**).

11. Sanjoy Mondal, U. Rana and Sudip Malik, *Network of Polyaniline Nanotubes for Wastewater Treatment and Oil/Water Separation*, *ACS Appl. Poly. Mater.*, **2019**, 1, 1624. ISSN: 2637-6105.

12. Sanjoy Mondal, U. Rana, R. R. Bhattacharya and S. Malik, *One Pot Green Synthesis of Polyaniline Coated Gold Nanorods and its Applications*, *RSC Adv.*, **2014**, *4*, 57282 ISSN: 2046-2069 (**IF= 3.07**).(Most read article).

13. U. Rana, Sanjoy Mondal, J. Sannigrahi, P. K. Sukul, Md. A. Amin, S. Majumdar and S. Malik, *Aromatic Bi-, Tri- and Tetracarboxylic Acid doped Polyaniline Nanotubes: Effect of Morphology and Electrical Transport Properties*, *J. Mater. Chem. C*, **2014**, *2*, 3382. ISSN: 2050-7534 (**IF=7.05**).

14. A. Roy, Sanjoy Mondal, A. Halder, A. Banerjee, D. Ghoshal, A. Paul, Sudip Malik, *Benzimidazole Linked Arylimide based Covalent Organic Framework as Gas Adsorbing and Electrode Materials for Supercapacitor Application*, *Euro. Poly. J.*, ***2017***, *93*, *448*. ISSN: 0014-3057 ***(IF=3.88)***.

15. D. C. Santra, Sanjoy Mondal and S. Malik, *Design of Triphenylamine Appended Anthracene Derivatives: Electro-polymerization and their Electro-chromic Behaviours*, *RSC Adv.*, **2016**, *6*, 81597. ISSN: 2046-2069 (**IF= 3.07**).

16. U. Rana, N. D. Paul, Sanjoy Mondal, C. Chakraborty and S. Malik, *Water Soluble Polyaniline Coated Electrode: A Simple and Nimble Electrochemical Approach for Ascorbic Acid Detection*, *Synth. Met.*, **2014**, *192*, 43. ISSN: 0379-6779 (**IF=2.52**).

17. YSLV Narayana, T Yoshida, M.K. Bera, Sanjoy Mondal, M Higuchi, *Ni (II)-Based Metallosupramolecular Polymer with Carboxylic Acid Groups: A Stable Platform for Smooth Imidazole Loading and the Anhydrous Proton Channel Formation*, *ACS Omega* **2020**, 5, 24, 14796–14804. ISSN: 2470-1343 (**IF=2.87**).

18. T. Yoshida, M.K. Bera, Y. S. L. V. Narayana, Sanjoy Mondal, Hitoshi Abe Masayoshi Higuchi, *Electrochromic Os-Based Metallo-supramolecular Polymers: Electronic State Tracking by In-situ XAFS, IR, and Impedance Spectroscopies*, *RSC Adv.*, **2020**, 10, 24691–24696, ISSN: 2046-2069 (**IF= 3.07**).

19. Md. D. Hossain, C. Chakraborty, U. Rana, Sanjoy Mondal, H.-J. Holdt, and M. Higuchi, *Green-to-Black Electrochromic Copper(I)-Based Metallo-Supramolecular Polymer with a Perpendicularly Twisted Structure*, *ACS Appl. Polym. Mater.* **2020**, 11, 4449–4454. ISSN: 2637-6105.

(**Google scholar link**:
https://scholar.google.co.in/citations?user=YhsuayoAAAAJ&hl=en&oi=ao)

Oral presentations

1. **Invited Talk** on "*Electrochromism and Electrochromic Device*" at Bankura University, WB, India, August 2020.
2. **Oral presentation** on "Metallo-Supramolecular Polymer for Electrochromic Energy Storage Materials" CSJ, Kobe, 2019
3. **Oral presentation** on Design and Fabrication of Thermally Stable Electrochromic Device. The 25th International Display Workshops. 2018
4. **Poster presentation** on *Thermally Stable Electrochromic Devices with Metallo-Supramolecular Polymer*. 43rd International Conference on Coordination Chemistry (ICCC). 2018
5. **Oral presentation** on *Investigation of Electrochromic Device Structure with Metallo-Supramolecular Polymer. 68th Symposium on Complex Chemistry. 2018*
6. **Oral presentation** on *"Thermally Stable Electrochromic Devices with Metallo-Supramolecular Polymer"* in 67th SPSJ Annual Meeting 2018 at Nagoya Congress Centre, Nagoya, 23rd May 2018.
7. **Oral presentation** on **"***High Performance Supercapacitor Device based on Polyaniline Nanostructures"* in YSC-MRSI-2016 at S. N. Bose National Centre for Basic Sciences, India, 16th September 2016.
8. **Oral presentation** on "*Facile Synthesis of Polyaniline/Ag Nanocomposite and its Applications*", in IIMR-15 at CGCRI-CSIR, Jadavpur, Kolkata, India, 11th July, 2015.
9. **Oral presentation** on "*Graphene oxide/polyaniline nanostructures: transformation of 2D sheet to 1D nanotube and in situ reduction*", in 3rd FAPS POLYMER CONGRESS and MACRO-2013, at IISc. Bangalore, India, 15-18 May 2013.

Research achievement

Ph. D. work (Indian Association for the Cultivation of Science, India; January 2012-Decmber 2016): During Ph.D. study, my research goal mainly focused on applications-based polyaniline (PANI) nanostructure and PANI/metal nanocomposite preparation. (i) Graphene quantum dots/PANI and rGO/Fe_3O_4/PANI nanocomposite used an energy storage electrode

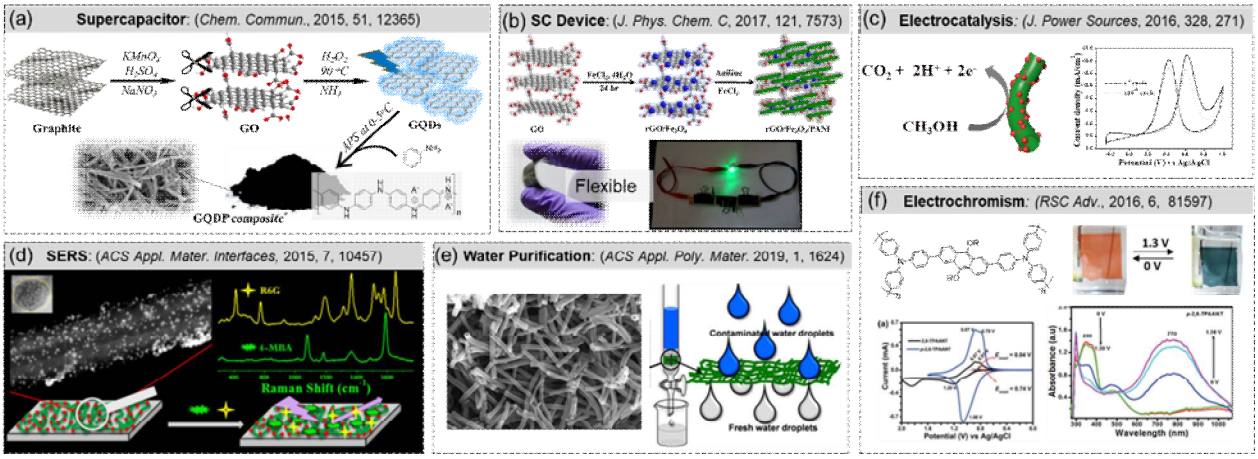

Fig.1. (a) GQDs/PANI for supercapacitor, (b) SCs device, (c) PANI/Pt-NPs for electrolysis for, (d) PANI/Ag-NPs for SERS, (e) PANI nanotubes for water purification and oil/water separation, (f) Triphenylamine based anthracene for electrochromism

material for supercapacitor and device fabrication (**Fig.1**a-b, *Chem Commun.*, **2015** and *J. Phys. Chem. C* **2017**). (ii) Room-temperature facile prepared composite (PANI/Ag-NPs and PANI/Pt-NPs) materials used for efficient SERS substrate for ppm level detection and electrocatalyst for methanol oxidation reaction (**Fig.1**c-d, *ACS Appl. Mater. Interfaces*, **2015** and *J. power Sources*, **2016**). (iii) Toxic organic dyes were removed by PANI nanotubes and additionally oil/water are separated (**Fig.1**e, *ACS Appl. Poly. Mater.*, **2019**. Furthermore, anthracene-based triphenylamine moiety was synthesized for electrodeposited electrochromic film preparation (**Fig. 1**f, *RSC Adv.*, 2016).

Postdoctoral work (National Institute for Materials Science, Japan: August 2017 to Present): As a postdoctoral researcher, here I am working on design and synthesis of various mettalo-supramolecular polymers (MSPs) for electrochromism (EC) application and practical device fabrication. (1) We developed Fe(II), Ru-(II) based MSP showing excellent reversible EC behavior with charge storage properties (**Fig.2a**, *ACS Appl. Mater. Interfaces*. **2020**), fabricated Electrochromic-supercapacitor device from spray printed MSP film. (2) For the first time We developed MSP for visible to NIR light blocking materials (**Fig.2b**, *ACS Appl. Mater. Interfaces* **2020**). (3) Novel 2D-nanosheet has been design and prepared in liquid/liquid interfacial technique, reveals red to complete transparent change with excellent durability (**Fig.2**c, *ACS*

Appl. Mater. Interfaces, **2020**). (4) To protect from hot environment, a solid-EC device design based with super-gel solid electrolyte (**Fig.2d**, *J. Soc. Inf. Display*. **2019,** *Sol. Mater. Sol. Cells, 2019*)

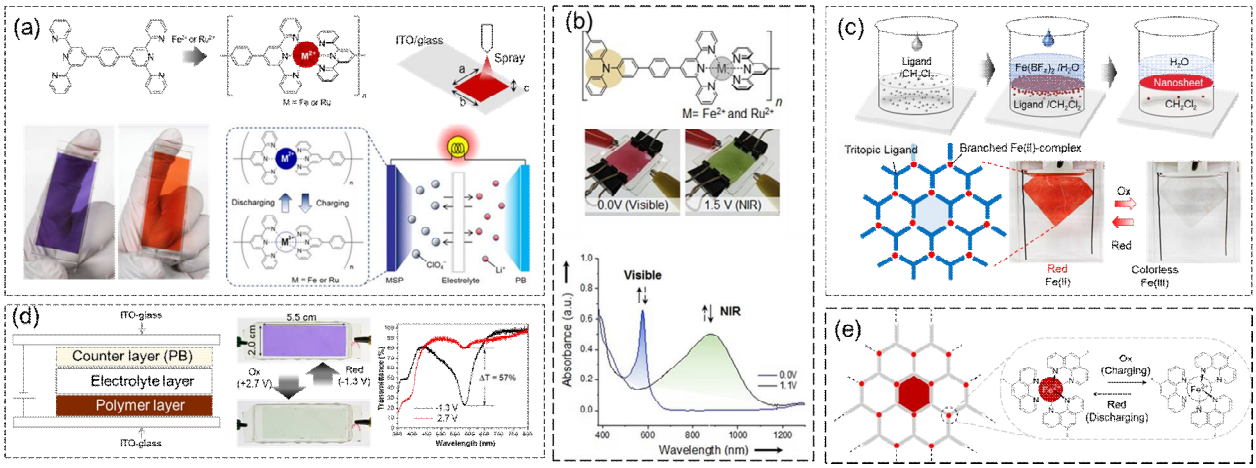

Fig. 2. (a) Fe(II), Ru(II) MSPs for electrochromism supercapacitor device, (b) 2D-Nanosheet for electrochromism, (c) IL-based ECD, (d) solid device for hot weather, (e) MSPs for conductive membrane, (f) low power, ultrahigh ECD device design.

(5) Room temperature liquid-liquid interfacial growth nanosheets used as durable high performance supercatattery electrode materials (**Fig2.e**, *ACS Appl. Eng. Mater*. **2020**). Few of projects are under processing for visible to NIR light absorbing electrochromism for energy saving smart windows fabrication and electroflurochromic device development.