

Dr. BEENA K. B.

Assistant Professor of Chemistry

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PERSONAL INFORMATION

Date of Birth : 03.03.1984
Citizenship : India
Languages known : English, Hindi, Malayalam
Marital Status : Married

EDUCATION

- **Ph.D. in Chemistry** from CSIR – National Chemical Laboratory, Pune
Title: Carbon nanofiber-based hybrid materials for PEMFC applications
- **M.Sc. in Applied Chemistry** (8.43 CGPA, First class with distinction)
Department of Applied Chemistry, Cochin University of Science and Technology, Kerala, India.
- **B.Sc. in Chemistry** (87.8 %, First class with distinction) from University of Kannur, Kerala, India.

TEACHING EXPERIENCE

- Lecturer in Chemistry, Department of Chemistry, Govt. Engineering college, Kannur from 04-03-2010 to 31-04-2010.
- Assistant professor of Chemistry, Department of Chemistry, EKNM Govt. Polytechnic College, Thrikkaripur from 02-07-2012 to 21-12-2012.
- Assistant professor of Chemistry, Department of Chemistry, Govt. Polytechnic College, Kannur from 22-12-2012 to 05-06-2013
- Assistant professor of Chemistry, Department of Chemistry, Kerala Govt. Polytechnic College, Westhill, Kozhikode from 06-06-2013 to 09-06-2017
- Assistant Professor of Chemistry, Department of Chemistry from 10-06-2017 to till date.

KEY SKILLS

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- Design and synthesis of metal and metal oxides nanomaterials
 - Tailoring carbon nanomaterials for energy applications
 - Structural and electrochemical characterization of materials

RESEARCH EXPERIENCE

- Project Assistant in Physical and Materials Chemistry Division, CSIR-National Chemical Laboratory, Pune, India; Synopsis of project work entitled: "Synthesis and characterization of silver nanowires."
- Carried out M.Sc. dissertation in Physical and Materials Chemistry Division, CSIR-National Chemical Laboratory, Pune, India under the guidance of Dr. K. Vijayamohanan (Title: Template Assisted Synthesis of one-dimensional Nanostructures of Ruthenium and Ruthenium Oxide.)
- Design and synthesis of metal and metal oxide nanomaterials for energy applications.
- Detailed structural and electrochemical characterization of various materials

AWARDS

- Qualified GATE 2007
- Qualified NET 2007
- Qualified CSIR-JRF 2008_

PUBLICATIONS

1. Effect of the Viscosity of Poly(benzimidazole) on the Performance of a Multifunctional Electrocatalyst with an Ideal Interfacial Structure; **Beena K Balan**, Bipinlal Unni, Harshal D Chaudhari, Ulhas K Kharul and Sreekumar Kurungot, **J. Mater. Chem. A** 2013, 1, 4265 - 4276.
2. Carbon nanofiber-RuO₂-poly(benzimidazole) ternary hybrids for improved supercapacitor performance; **Beena K Balan**, Harshal D Chaudhari, Ulhas K Kharul and Sreekumar Kurungot, **RSC Advances** 2013, 3, 2428 - 2436.
3. Polybenzimidazole Mediated N-Doping Along the Inner and Outer Surfaces of Carbon Nanofiber and Its Oxygen Reduction Properties; **Beena K Balan**, Aiswarya Padinhare Manissery, Harshal D Chaudhari, Ulhas K Kharul and Sreekumar Kurungot, **J. Mater. Chem.** 2012. 22, 23668 - 23679.

4. Tuning the Functionality of a Carbon Nanofiber-Pt-RuO₂ System from Charge Storage to Electrocatalysis; **Beena K. Balan** and Sreekumar Kurungot, **Inorg.Chem.** 2012, 51, 9766 -9774.
5. One-dimensional Confinement of Nanosized Metal Organic Framework in Carbon Nanofibers for Improved Gas Adsorption; Pradip Pachfule, **Beena K. Balan**, Sreekumar Kurungot and Rahul Banerjee, **Chem Commun.** 2012, 48, 2009 - 2011.
6. Highly exposed and activity modulated sandwich type Pt thin layer catalyst with enhanced utilization; **Beena K. Balan** and Sreekumar Kurungot, **J. Mater. Chem.** 2011, 21, 19039 -19048.
7. High Aspect Ratio Nanoscale Multifunctional Materials Derived from Hollow Carbon Nanofiber by Polymer Insertion and Metal Decoration; **Beena K. Balan**, Pradnya P. Aher, Manjusha V. Shelke, Vijayamohanan K. Pillai and Sreekumar Kurungot, **Chem Commun.** 2010, 46, 5590 -5592.
8. Carbon Nanofiber with Selectively Decorated Pt Both on Inner and Outer Walls as an Efficient Electrocatalyst for Fuel Cell Applications; **Beena K. Balan**, Sreekuttan M Unni And Sreekumar Kurungot, **J. Phys. Chem. C.** 2010, 113, 11572-11578.
9. Significant Enhancement of Formic Acid Oxidation Using Rhodium Nanostructures; **Beena K. Balan** and Bhaskar R Sathe, **J. Nanosci. Nanotechnol.** 2012, 12, 8994-8998.
10. Carbon Nanofiber-MnO₂-Polybenzimidazole hybrids for high performance supercapacitors; **Beena K. Balan** and Sreekumar Kurungot, Manuscript submitted to **ACS Appl. Mater. Inter.**
11. Enhanced electrocatalytic performance of interconnected Rh nano-chains towards formic acid oxidation; Bhaskar R Sathe, **Beena K. Balan** and Vijayamohanan K Pillai, **Energy Environ. Sci.** 2011, 4, 1029-1036.
12. Tunable optical features from self-organized rhodium nanostructures; Bhaskar R. Sathe, **Beena K. Balan**, and Vijayamohanan K. Pillai, **Appl. Phys. Lett.** 2010, 96, 233102-233104.
13. Template-Assisted Synthesis of Ruthenium Oxide Nanoneedles: Electrical and Electrochemical Properties; Mahima Subhramannia, **Beena K. Balan**, Bhaskar R Sathe, Imtiaz S Mulla, Vijayamohanan K Pillai, **J. Phys. Chem. C,** 2007, 111, 16593-16600.

TRAINING PROGRAMMES

1. **Refresher course in Environmental Sciences** conducted by UGC-HRDC Kannur University from 11-11-2015 to 01-12-2015
2. **Refresher course in Material Sciences** conducted by UGC-HRDC Calicut University from 03-12-2019 to 16-16-2019.
3. **Faculty Development Programme on Nanotechnology to Nanotribology** conducted by Department of Technical Education, Kerala from 06-01-2020 to 11-01-2020 held at Govt. Engineering College, Kozhikode.
4. **Faculty Development Programme on Hybrid Materials and applications** conducted by Department of Technical Education, Kerala from 13-01-2020 to 18-01-2020 held at Govt. Engineering College, Kozhikode.
5. **Faculty Development Programme on Fuel Cell Technology: Progress, Challenges and Future Prospects** from 22-03-2021 to 27-03-2021 organised by the Government Engineering College Kozhikode.
6. **Five Days Training for College Teachers on “Recent Advances in Inorganic Chemistry”** jointly organized by Department of Chemistry, School of Physical Sciences, & Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT), School of Education, Central University of Kerala (CUK), Kasaragod, from 05.03.2021 to 09.03.2021.
7. **Winter School in Physics and Chemistry** conducted by UGC-HRDC Kannur University from 24.11.2021 to 07.12.2021.

REFERENCES

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