

DETAILS BIODATA (DR. BANALATA SAHOO)

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ACADEMIC QUALIFICATIONS

- **PhD:** Department of Chemistry, Indian Institute of Technology Kharagpur (**IIT Kharagpur**), India; August **2014**.
Thesis Title: "Design and synthesis of multifunctional nanoparticles for biocatalysis and targeted delivery of anticancer drug".
- **M.Sc. (Chemistry):** Utkal University, Odisha, India; **2008 (Percentage = 75.2 %)**.

RESEARCH AREAS / RESEARCH INTERESTS

- Synthesis, characterization, and applications of different nanomaterials and nanoparticles.
- Nanomaterials for biological applications.
- Polymer Nanocomposites and their application.

TEACHING AND RESEARCH EXPERIENCE

- ❖ Assistant Professor of Chemistry, **Binayak Acharya College**, Brahmapur, Odisha 760006, India. (24 Jan, 2018 to Till Date).
- ❖ **Chemistry Lecturer, Department of Chemistry, Govt. Polytechnic College**, Kandhamala, Odisha, India. (30th Oct, 2015 to 20 Jan, 2018).
- ❖ **Assistant Professor (1st August, 2014 to 30th April, 2015)** at Department of Chemistry, Regional Institute of Education, Bhubaneswar - 751022, Odisha, India.
- ❖ **Four years and six months of research experience in Design and synthesis of multifunctional nanoparticles and their application in biological system.** (Nanobiotechnology) - Ph.D. research experience at Indian Institute of Technology Kharagpur, West Bengal, India.

Description: Synthesis of magnetic, silica, polymeric nanoparticles, core-shell nanostructures, responsive block polymer preparation and their modification on magnetic nanoparticles, extensive characterization analysis and exploitation their application in biocatalysis, targeted drug delivery system and in magnetic resonance based diagnosis study.

❖ **10 months of research experience in total synthesis of biologically active molecules.**

Sep, 2008 to June, 2009 at **R & D, Advinus Therapeutic Pvt. Ltd.**, Bangalore, India

Designation: Research Assistant

Job Profile

Research activities

- a. Synthesis of benzimidazole derivatives and their purification through column and flash chromatography, and finally recovered.
- b. Analysis of synthesized product through NMR, HPLC, and Mass spectroscopy studies.
- c. **Achievements:** Successfully completed 6-7 molecules synthesis with more than 90% purity. Out of them some are given :(i) 1,5-flouro-2-methyl benzimidazole-TCA-cyclopropyl amide; (ii)2,2-propylbenzimidazole-TCA-cyclopropyl amide etc. I have also done **Suzuki Coupling Reaction**.

PUBLICATIONS (Total Citations: 1108; h-index: 12; i10-index: 13)

1. **Banalata Sahoo**, Sumanta Kumar Sahu, Panchanan Pramanik, “*A novel method for the immobilization of urease on phosphonate grafted iron oxide nanoparticles*”, **Journal of Molecular Catalysis B - Enzymatic**, 69, 95-102, 2011. (IF: 2.48)
2. **Banalata Sahoo**, Sumanta Kumar Sahu, Suryakanta Nayak, Dibakar Dhara and Panchanan Pramanik, “*Fabrication of magnetic mesoporous manganese ferrite nanocomposites as efficient catalyst for degradation of dye pollutants*”, **Catalysis Science and Technology**, 2, 1367-1374, 2012. (IF: 6.177)
3. **Banalata Sahoo**, Sumanta Kumar Sahu, Dipsikha Bhattacharya, Dibakar Dhara, Panchanan Pramanik, “*A novel approach for efficient immobilization and stabilization of papain on magnetic gold nanocomposites*”, **Colloids and Surfaces B - Biointerfaces**, 101, 280-289, 2013. (IF: 5.99)
4. **Banalata Sahoo**, K. Sanjana P. Devi, Sumanta Kumar Sahu, Suryakanta Nayak, Tapas K. Maiti, Dibakar Dhara and Panchanan Pramanik, “*Facile preparation of multifunctional hollow silica nanoparticles and their cancer specific targeting effect*”, **Biomaterials Science**, 1, 647-657, 2013. (IF: 7.59)

5. **Banalata Sahoo**, K. Sanjana P. Devi, Rakesh Banerjee, Tapas K. Maiti, Panchanan Pramanik, and Dibakar Dhara, “*Thermal and pH responsive polymer-tethered multifunctional magnetic nanoparticles for targeted delivery of anticancer drug*”, **ACS Applied Materials & Interfaces**, 5, 3884-3893, 2013. (IF: 10.58)
6. **Banalata Sahoo**, K. Sanjana P. Devi, Sujana Dutta, Tapas K. Maiti, Panchanan Pramanik, and Dibakar Dhara, “*Biocompatible mesoporous silica-coated superparamagnetic MnFe₂O₄ nanoparticles for targeted drug delivery and mr imaging applications*”, **Journal of Colloid and Interface Science**, 431, 31-41, 2014. (IF: 9.965)
7. Suryakanta Nayak, **Banalata Sahoo**, Tapan Kumar Chaki, and Dipak Khastgir, “*Development of polyurethane-titania nanocomposites as dielectric and piezoelectric material*”, **RSC Advances**, 3, 2620-2631, 2013. (IF: 4.036)
8. K. Sanjana P. Devi, Bibhas Roy, Pradip Patra, **Banalata Sahoo**, Syed S. Islam, and Tapas K. Maiti, “*Characterization and lectin microarray of an immunomodulatory heteroglucan from Pleurotus ostreatus mycelia*”, **Carbohydrate Polymers**, 94 (2), 857-865, 2013. (IF: 5.158)
9. Suryakanta Nayak, **Banalata Sahoo**, Tapan Kumar Chaki, and Dipak Khastgir, “*Facile preparation of uniform barium titanate (BaTiO₃) multipods with high permittivity: Its impedance and temperature dependent dielectric behavior*”, **RSC Advances**, 4, 1212-1224, 2014. (IF: 4.036)
10. Triveni Kumar Mahto, Anurag Roy, **Banalata Sahoo**, Sumanta Kumar Sahu, “*Citric acid functionalized magnetic ferrite nanoparticles for photocatalytic degradation of azo dye*”, **Journal of Nanoscience and Nanotechnology**, 14, 1-8, 2014. (IF: 1.25)
11. K. Sanjana P. Devi, Birendra Behera, **Banalata Sahoo**, Tapas K. Maiti, “*Heteroglucan-dendrimer glycoconjugate: a modulated construct with augmented immune responses and signaling phenomena*”, **Biochimica et Biophysica Acta**, 1840 (9), 2794-2805, 2014. (IF: 5.34)
12. K. Sanjana P. Devi, **Banalata Sahoo**, Birendra Behera, Tapas K. Maiti, “*Nanoparticle and polysaccharide conjugate: A potential candidate vaccine to improve immunological stimuli*”, **International Journal of Biological Macromolecules**, 72, 1254-1264, 2015. (IF: 2.80)
13. **Banalata Sahoo**, S. Dutta, and D. Dhara. "Amine-functionalized magnetic nanoparticles as robust support for immobilization of Lipase." **Journal of Chemical Sciences** 128.7 (2016): 1131-1140. (IF: 1.254)

14. Triveni Kumar Mahto, Angshuman Ray Chowdhuri, **Banalata Sahoo**, Sumanta Kumar Sahu, "Polyaniline functionalized magnetic mesoporous nanocomposite: a smart material for the immobilization of lipase", **Polymer Composites**, 37 (4), 1152-1160, 2016. (IF: 1.943)
15. Suryakanta Nayak, **Banalata Sahoo**, and Dipak Khastgir, "Flexible Nanocomposites Comprised of Poly(dimethylsiloxane) and High-Permittivity TiO₂ Nanoparticles Doped with La³⁺/Cu⁺ for Dielectric Applications" .**ACS Applied Nanomaterials**, DOI: 10.1021/acsanm.9b00668.

BOOK

1. Suryakanta Nayak, **Banalata Sahoo**, Tapan Kumar Rout, "*Sol-Gel Nanotitania Coating for Improved Surface Properties of Metals*", **LAP LAMBERT Academic Publishing**, Omni Scriptum GmbH & Co. KG, Heinrich-Böcking-Str. 6-8, 66121, Saarbrücken, **Germany**, ISBN 978-3-659-51528-6.
2. Suryakanta Nayak, **Banalata Sahoo**, Tapan Kumar Rout, "*Dielectric properties of polymer-graphene composites*"**Elsevier** (ISBN 9780128216392), page-141-161, Publication date 2021/8/27.

INTERNATIONAL CONFERENCE PAPERS

1. **Banalata Sahoo**, Dibakar Dhara, Panchanan Pramanik, "*Fabrication of Magnetic Nanoparticles for Enzyme Immobilization*", Diamond Jubilee Symposium on Recent Trends in Chemistry (DJSRTC-2011), Dept. of Chemistry, IIT Kharagpur, 21-23 October, 2011.
2. **Banalata Sahoo**, Dibakar Dhara, Panchanan Pramanik, "*Functionalized Magnetic Nanoparticle For Enzyme Immobilization*", 2nd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2011), IIT Guwahati, Assam, 8-10 th December, 2011.
3. **Banalata Sahoo**, Dibakar Dhara, and Panchanan Pramanik, "*Fabrication of magnetic manganese ferrite mesoporous silica nanocomposites for degradation of dye pollutants*", Advances in Materials and Processing-Challenges and Opportunities (AMPCO 2012), IIT Roorkee, 2-4 Nov, 2012.
4. **Banalata Sahoo**, Dibakar Dhara and Panchanan Pramanik, "*Preparation, Characterization of magnetic manganese ferrite mesoporous silica nanocomposites for the degradation of dye*", International Conference on Recent Advances in Composite Materials (ICRACM-2013), 18-21 Feb, Goa, Organized by IIT Varanasi, 2013.

5. **Banalata Sahoo**, Dibakar Dhara and Panchanan Pramanik, “*Dual Responsive Block Polymer-Tethered Multifunctional Magnetic Nanoparticles for Targeted Drug Delivery to Cancer Cells*”, International Conference on Functional Materials (ICFM-2014) 5-7th February, **IIT Kharagpur, INDIA**, 2014.

NATIONAL CONFERENCE/SYMPOSIUM PAPER

1. **Banalata Sahoo**, “*National Symposium on Recent trends in organometallic compounds and their industrial applications*”, **KIIT University, Bhubaneswar, Odisha**, 26-28 February, 2007.

REFRESHER/ORIENTATION ATTENDED

1. Attended a refresher course in Chemistry conducted by **SWOYAM ARPIT** from 01 Sep 2019 to 31 Dec 2019 (Flexible Mode)
2. Attended an orientation course conducted by **Guru Tegh Bahadur Khalsa College**, Delhi University from 03 December 2020 to 30 December 2020.
3. Attended a Refresher course in Chemistry conducted by **Savitribai Phule pune University** from 18.10.2021 to 31.10.2021.

WORKSHOP PARTICIPATED

1. Attended **ACS on Campus Event** at **IIT Kharagpur** on November 25, 2013 organized by American Chemical Society.
2. Participated **Springer Workshop** at **IIT Kharagpur** on February 12, 2014 jointly organized by Springer and IIT Kharagpur.
3. Conducted a webinar as a co-ordinator on Career opportunities for students for various competitive examination after graduation on 18.06.2022.
4. Attended a workshop on Implementation of NEP 2020: Motivated, Energized and Capable Faculty on 10.08.2022 in virtual mode.
5. Attended a workshop on Implementation of NEP 2020: Promotion of Indian Knowledge Systems on 12.08.2022 in virtual platform.

EXTRA CURRICULAR ACTIVITY ASSIGNED (YEAR: 2022-2023)

1. Exam in-charge of +3 Wings
2. A member of purchase and building committee.

INSTRUMENTAL KNOWLEDGE

I have worked with all the below mentioned Instruments.

(1) NMR spectroscopy, (2) GPC, (3) Viscosity measurement, (4) Zeta-potential measurement, (5) VSM-SQUID analysis, (6) X-ray diffraction (XRD) techniques for crystallographic study, (7) UV-Visible Spectroscopy, (8) FTIR spectroscopy, (9) Dynamic light scattering (DLS) for particle size analysis, (10) Fluorescence spectroscopy, (11) Ball milling, (12) Field emission scanning electron microscope (FESEM), (13) High resolution transmission electron microscope (HRTEM), (14) Atomic force microscope (AFM), (15) X-ray photoelectron spectroscopy (XPS), (16) Cell cytotoxicity test (MTT assay), (17) Fluorescence microscopy analysis, (18) Dielectric spectrometer, (19) High Resistance meter, (20) Image analyzer, (21) Thermogravimetric analysis (TGA), (22) Differential scanning calorimetry (DSC), and (23) UTM for mechanical properties etc.

- ❖ Knowledge of handling / maintenance / calibration of laboratory equipments.
- ❖ Knowledge of Thin layer chromatography plate preparation & analysis and also worked with Column Chromatography.
- ❖ Have knowledge to synthesize and isolation of organic compounds and polymers.

ACHIEVEMENTS

- a. 3rd position in M.Sc. (Chemistry) at Utkal University, Odisha, India.
- b. Qualified NET (CSIR)-June, 2008, NET (LS)-December, 2008, NET (LS)-June, 2007.
- c. Received a certificate from Elsevier publication for maximum citation of my paper “Journal of Molecular Catalysis B: Enzymatic”, for the year 2011-2012.