FACULTY PROFILE

1. Name: Dr. Sunita Barik

2. Qualification: M.Sc., M.Phil., Ph.D., B.Ed.

3. Designation: Assistant Professor (TE) in Chemistry

4. Email Id: bariksunita2010@gmail.com, sunitabarik2010@gmail.com

5. Area of interest:

Inorganic Chemistry, Polymer Chemistry, Environmental Chemistry

6. Area of research:

- Synthesis of Layered Double Hydroxide and Silica based porous materials
- Evaluation of physicochemical properties of the above nanomaterials using different characterization techniques.
- Application of LDH as a filler material for the synthesis of Polymer based Composites.
- Evaluation of properties of the Composites to find out its suitability for several application

7. Teaching Area:

UG: Inorganic chemistry, Solutions, Kinetic theory of Gases
PG: Polymer chemistry, Coordination chemistry, Surface Chemistry

8. Total No. of Teaching Experience (yrs):

UG:12years
PG: -

9. Research Supervision: Nil

10. Publication Profile:

(a) Research articles published: (Total 09)

1. **S. Barik**, P. K. Namdeo, R. K. Sharma, A Review on "*Nanomaterials-Based Approach for Photodynamic Therapy*". ***Chemistry Select,*** (Wiley) 2024 doi.org/10.1002/slct.202400587.
2. P. K. Jena, J. R. Mohanty, S. Nayak, **S. Barik** "*A Study on Erosion Wear Behavior of Benzoyl Chloride Modified Vetiver Grass (Chrysopogon Zizanioides) and Red Mud as Reinforcement in Polymer Based Composites"* ***Journal of Natural Fibers*** (Taylor & Francis) 19, 3253-3264, 2022.
3. **S. Barik**, L. Behera, S. K. Badamali, P.K.Jena *"Mg-Al LDH reinforced PMMA nanocomposites: A potential material for packaging industry".* ***Composite Interfaces***, (Taylor & Francis) 25, 369-380, 2018.
4. S.K. Swain, **S. Barik**, G.C. Pradhan, L. Behera "Delamination of Mg-Al Layered Double Hydroxide on Starch: Change in Structural and Thermal Properties, Polymer-Plastics Technology and Engineering", ***Polymer-Plastic Technology and Engineering***, (Taylor & Francis) 57, 1585-1591, 2018.
5. R. Kumar Sharma, Y. N. Chouryal, S. Nigam, J. Saravanakumar, **S. Barik**, P. Ghosh "Tuning the Crystal Phase and Morphology of the Photoluminescent Indium Sulphide Nanocrystals and Their Adsorption-Based Catalytic and Photocatalytic Applications" ***Chemistry Select***, (Wiley) 3, 8171-8182, 2018.
6. **S. Barik**, S. K. Badamali, S. Sahoo, N. Behera, S.E. Dapurkar"Nanosize $Fe_x O_y$ @SBA-3: A Comparative Study Between Conventional and Microwave Assisted Synthesis" ***Journal of Nanoscience and Nanotechnology,*** (American Scientific Publishers) 18, 323-327, 2018.

7. **S. Barik**, A. Khandual, L. Behera, S. K. Badamali, A. Luximon "Nano-Mg–Al-layered double hydroxide application to cotton for enhancing mechanical, UV protection and flame retardancy at low cytotoxicity level" ***Cellulose,*** (Springer) 24,1107-1120, 2017.
8. **S. Barik**, L. Behera, S. K. Badamali "Assessment of thermal and antimicrobial properties of PAN/Zn-Al layered double hydroxide nanocomposites" ***Composite Interfaces***, (Taylor & Francis) 24, 579-591, 2017.
9. **S.Barik**, S.K. Kisku, L. Behera, S.K. Swain "Enhancement of Thermal Properties of Polyacrylonitrile by Reinforcement of Mg-Al Layered Double Hydroxide". ***Polymer Composite***, (Wiley) 36, 2140-2144, 2015.

(b) Books Chapter published (Total 08)

1. **S. Barik** "Challenges of a Teacher in Handling Disabled Students in General Class Room" Chapter 30, "Equity, Diversity and Inclusion under NEP 2020 opportunities and challenges" Kunal Books (2025).
2. **S. Barik**, R. K. Sharma "Waste-Driven Carbon Nanomaterials for Drug Delivery Application", Chapter 11, "Waste-derived Carbon Nanostructures" Springer (2024).
3. **S. Barik**, R. K. Sharma, and C. Rath "Heparin based nano-composites for tissue engineering", Chapter 7, "polysaccharide-based nanocomposites for gene delivery and tissue engineering" Elsevier (2021).
4. S. Nayak, **S. Barik** and P. K. Jena "Eco-friendly, bio-degradable and compostable plates from areca leaf", Chapter 7, "Biopolymers and Biocomposites from Agro-Waste for Packaging Applications" Elsevier (2021).

5. **S. Barik** "Layered Double Hydroxide Decorated Hydrogel For Biomedical Applications", Chapter 23, "Nanostructured Polymer Composites for Biomedical Applications" Elsevier (2019).
6. K. Prusty, **S. Barik** and S. K. Swain "A correlation between the graphene surface area, functional groups, defects and porosity on the performance of the nanocomposites", Chapter 13, "Functionalized Graphene-based Nanocomposites and its Derivatives" Elsevier (2019).
7. S. K. Swain and **S. Barik** "Nanomaterials as Sensor for Hazardous Gas Detection" Chapter 51, "Handbook of Ecomaterials", Springer (2018).
8. **S. Barik** and S. K. Badamali *"LDH-Based Bionanocomposite for Packaging Applications*" Chapter 14, "Bionanocomposites for packaging applications", Springer (2018).

(c)Books published: Nil

(d) Articles published in Newspapers / Magazines: Nil

11. Research projects: Nil

12.Paper presentation in conferences / seminars

1. Presented a paper in National seminar on Promoting Equity, Diversity and Inclusiveness under NER2020: Opportunities and Challenges, 9th March 2025 DPIASE, Berhampur, Ganjam, Odisha

   Title: Challenges of a Teacher in Handling Disabled Students in General Class Room
2. Presented a poster in International Conference on Advances in Polymer Science &Technology, 23-25 November, 2017. New Delhi, India.

   Title: LDH Decorated Cotton: A novel material for Textile Industry.

3. Presented an oral paper in UGC Sponsored National Seminar on "Recent Trends in Chemical Sciences" organized by P.G. Department of Chemistry, North Orissa University, Baripada-757003, Odisha on 8th April, 2017.

   Title: Effect of Magnesium-Aluminium layered double hydroxide (LDH) on thermal properties in various vinyl polymers

4. Presented a poster in International Conference on Recent Advances in Materials Chemistry (RAMC 2017), organized by Department of chemistry Utkal University, Bhubaneswar, Odisha, India, 751004 on 24th - 26th February 2017.

   Title: Polymethylmethacrylate/Layered Double Hydroxide nanocomposites as an Ideal Packaging Material

5. Presented an oral paper in 30th Annual Conference of Orissa Chemical Society organized at Department of Chemistry, KIIT University, Bhubaneswer on 24th - 25th December, 2016.

   Title: ***Cellulose/Mg-Al Layered Double-Hydroxide Composite as a Novel Material for Textile Industry***

6. Presented a poster in Indian Science Congress Association, National Seminar on Science and Technology for National Development in India, organized by KIIT University, Bhubaneswer on 12th – 13th December, 2016.

   Title: A comparative study of Al containing LDH on the thermal and antimicrobial properties of PAN

7. Presented a poster in 1stUtkal University Research Scholars' Conclave, April 30, 2016, VaniVihar.

Title: Cotton-LDH hybrid material: A study on the mechanical, UV protection,

Cytotoxicity and flame retardancy properties

8. Presented an oral paper in 29th Annual Conference of Orissa Chemical Society & National Seminar on Recent Advances on Materials Science for Sustainable Energy and Environment (RAMSSE) organized at Indira Gandhi Institute of Technology, Sarang, Dhenkanal 24th - 25thDecember, 2015.

Title: Effect of Zn-Al-LDH on Thermal and Anti-microbial properties of PMMA.

9. Presented an oral paper in 3rd International Conference on Nanostructured Materials and Nanocomposites (ICNM-2015) organized by Hindustan College of Science and Technology, Farah, Mathura-281122 (U.P.) India on 12th-14th December, 2015.

Title: Enhancement of Thermal and Antimicrobial properties of PAN by reinforcement of dispersion of Zn-Al LDH.

10. Presented a poster in International Conference on Innovative Applications of Chemistry in Pharmacology & Technology organized by P.G. Department of Chemistry, Berhampur University, Bhanja Bihar-760007,Odisha, India on 06th-08th February, 2015

Title: Synthesis and Characterisation of Mg- Al-Layered Double Hydroxide.

11. Participated in the 28th Annual Conference of Orissa Chemical Society & National Conference on Recent Trends in Material Science organized by

Department of Chemistry, U.N. (Auto) College of Sc. & Tech., Adaspur, Cuttack on 13rd -14th December, 2014.

12. Presented an oral paper in National Seminar on Materials Chemistry & Catalysis (MCC-VI) organized by P.G. Department of Chemistry, North Orissa University, Baripada-757003, Odisha on 26th-27th March, 2014.

Title: Effect of Al-Mg-LDH on Anti-microbial properties of PAN

13. Presented a *poster* in National Seminar on Recent Advancement in Material Science (RAIMS-13) organized by Department of Chemistry, Veer Surendra Sai University of Technology, Burla-768018, Odisha on 26th-27th October, 2013.

Title: Synthesis and Characterisation of Nanoporous SBA-3 Molecular Sieve

13. Invited Lectures/ Special Lectures/ Resource person or presentation at conference/ workshops: Nil

14. Awards and Distinction:

Received Best Poster Award in National Seminar on Recent Advancement in Material Science (RAIMS-13) organised by Department of Chemistry, Veer Surendra Sai University of Technology, Burla-768018, Odisha on 26th-27th October, 2013.

15. Association with professional bodies:

Odisha chemical society