List of Publications

In Journals

- [1] **Kar, A.**, and Karak, N. Bio-based poly (ester amide): mechanical, thermal and biodegradable behaviors. *Journal of Polymer Research*, 29(9):366, 2022.
- [2] **Kar, A.**, Rather M. A., Mandal, M., and Karak, N. Elastomeric biodegradable poly (ester amide urethane) as a tough and robust material. *Progress in Organic Coatings*, 182:107684, 2023.
- [3] **Kar, A.**, and Karak, N. Lignin-based biochar/poly(ester amide urethane) nanocomposites: Sustainable approach for dye removal from contaminated wastewater (**Revised in** *Journal of Renewable Materials*, **Journal id: JRM** 52220).
- [4] **Kar, A.**, and Karak, N. Tailored biochar infused poly(ester amide urethane) nanocomposites for efficient heavy metal removal (**Manuscript submitted**).
- [5] Morang, S., Bandyopadhyay, Borah, N., **Kar, A.**, Mandal, B., and Karak, N. Photoluminescent self-healable waterborne polyurethane/Mo and S co-doped graphitic carbon nitride nanocomposite with bio-imaging and encryption capability. *ACS Applied Biomaterials*, 7(3):1910-1924, 2024.

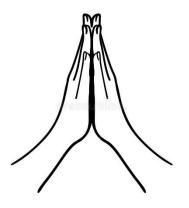
Book Chapters

- [1] **Kar, A.**, Borah, N., and Karak, N. Life cycle assessment approach for mitigating problems of plastic waste management. In Deshmukh, K. and Parameswaranpillai, J., editors, *Plastic Waste Management: Methods and Applications*, Wiley VCH, 2024.
- [2] Borah, N., **Kar**, **A.**, and Karak, N. Biocomposites of biopolymers with metals and their derivatives. In Karak, N. editor, *Advances in Biocomposites and their Applications*, Elsevier Inc. 2024.

Conferences

[1] **Kar, A.** and Karak, N. Citric acid based poly(ester amide urethane) thermoset as a sustainable coating material, Frontiers in Chemical Sciences (FICS 2022) at Indian Institute of Technology, Guwahati, 2-4 December 2022, India.

- [2] **Kar, A.** and Karak, N. Fabrication of a bio-based tough water soluble poly(ester amide) as an environmentally benign polymeric material, International Conference on Materials Chemistry and Catalysis (MCC 2021) at Tezpur University, Tezpur, 4-5 March 2021.
- [3] **Kar, A.** and Karak, N. Lignin-based biochar/poly(ester amide urethane) nanocomposites: Sustainable approach for dye removal from contaminated wastewater, Current Trends of Research in Chemistry Towards Sustainability, Health Care and Forensic Analysis (SusChemHeca-2024) at Tezpur University, Tezpur, 14-15 March 2024. (**Best Oral presenter award**).



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Chapter 1

General Introduction Highlights

This chapter delves into an in-depth exploration of the fundamental aspects of polyester amide)s and their nanocomposites derived from bio-based materials. It encompasses a brief overview on several core elements, inclusive of the structural compositions of polyester amide)s, the materials and methodologies used in carrying out their synthesis, the techniques engaged for characterization, the evaluation of their properties followed by their potential applications. In addition, this chapter demonstrates the production of different poly(ester amide) nanocomposites utilizing various carbon-based nanomaterials, particularly nanoclay, carbon nanotubes, biochar, modified biochar, etc. In turn, the chapter also provides a comprehensive discussion on different spectroscopie, analytical, and microscopic methods exclusively employed to conduct characterization of various anomaterials, nanohybrids, and poly(ester amide) nanocomposites. Additionally, this chapter showcases upon bnow the quantity and type of reinforcing agents can influence the performance attributes of these poly(ester amide) nanocomposites. The chapter also touches down the aspect of manifold prospective applications exhibited by these poly(ester amide)s and their nanocomposites in the domain of material science and technology. In culmination, it outlines in detail the scopes, objectives as well as plan of the current research.

1-1

Sustainable waterborne poly(ester amide) nanocomposites and their potential applications

by Annesha Kar

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