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# List of Publications

Following are the list of published and communicated research papers during PhD work:

1. **Ranjan, R.,** Bhatt, S. B., Rai, R., Sharma, S. K., Verma, M., & Dhar, P. (2024). Valorisation of sugarcane bagasse with *in-situ* grown $MoS_2$ for continuous pollutant remediation and microbial decontamination. *Environmental Science and Pollution Research*, 1-17.
2. **Ranjan, R.,** Bhatt, S. B., Rai, R., Sharma, S. K., Ranjan, R., Bharti, A., & Dhar, P. (2024). Rice husk valorisation by *in-situ* grown $MoS_2$ nanoflowers: a dual-action catalyst for pollutant dye remediation and microbial decontamination. *RSC advances*, *14*(17), 12192-12203.
3. **Ranjan, R.,** Rai, R., Naik, K., Parmar, A. S., & Dhar, P. (2024). Scalable phosphorylated cellulose production with improved environmental sustainability, crosslinkability and processability using 3D bioprinting for dye remediation. *International Journal of Biological Macromolecules*, *264*, 130577.
4. **Ranjan, R.,** Rai, R., Bhatt, S. B., & Dhar, P. (2023). Technological road map of Cellulase: A comprehensive outlook to structural, computational, and industrial applications. *Biochemical Engineering Journal*, 109020.
5. Rai, R., **Ranjan, R.,** & Dhar, P. (2022). Life cycle assessment of transparent wood production using emerging technologies and strategic scale-up framework. *Science of The Total Environment*, *846*, 157301.
6. Rai, R., **Ranjan, R.,** Kant, C., Ghosh, U. U., & Dhar, P. (2023). Environmentally Benign Partially Delignified and Microwave Processed Bamboo- Based Drinking Straws. *Advanced Sustainable Systems*, *7*(7), 2300057.

7. Rai, R., **Ranjan, R.,** Kant, C., & Dhar, P. (2023). Biodegradable, eco-friendly, and hydrophobic drinking straws based on delignified phosphorylated bamboo-gelatin composites. *Chemical Engineering Journal*, *471*, 144047.
8. Rai, R., **Ranjan, R.,** Kant, C., & Dhar, P. (2024). Microplastic and adhesive-free, multifunctional, circular economy approach-based biomass-derived drinking straws. *iScience*.
9. Bhatt, S. B., **Ranjan, R.,** & Dhar, P. (2024). Functionalized jute with high-water absorption, low thermal conductivity and efficient radiative cooling for preservation of perishable green vegetables reducing cold storage energy requirements, Journal of Materials Chemistry A.(Accepted June 2024)

**List of submitted paper**

1. R. Ranjan, R. Rai, K. Naik, A. S. Parmar, and "*In-situ* Growth of $MoS_2$ on 3D Printed Phosphorylated Cellulose for Simultaneous Dye Degradation and Microbial Inactivation" (**Under review**).
2. **Rahul Ranjan**, Vedang P. Mone, Rohit Rai, Chandra Kant and Prodyut Dhar, Biomass-derived all-cellulose phosphate-based heat sealable films and thermally stable anti-fizzing cups with improved recyclability**.** (**Under review)**
3. **Rahul Ranjan** and Prodyut Dhar, Sustainable cellulose-silica aerogels with low thermal conductivity and flame-retardant properties for packaging of perishable food products (**Under review**)

**List of papers to be communicated**

1. **Rahul Ranjan**, Chandra Kant and Prodyut Dhar, Multifunctional cellulose phosphate-based food packaging films from biomass: Structure-functional relationship and environmental assessment studies. (**To be submitted**)

2. **Rahul Ranjan** and Prodyut Dhar, Valorisation of agricultural waste: sugarcane bagasse as a source of aerogel and fruit foam for food packaging materials. (**To be submitted**)
3. **Rahul Ranjan** and Prodyut Dhar, Phosphorylated viscose film development: A sustainable and economically viable approach for mechanically robust, charged, and transparent packaging material. (**To be submitted**)
4. **Rahul Ranjan,** Ram, Suraj Gaur and Prodyut Dhar, Development of phosphorylated wheat straw films for food packaging: Enhanced antibacterial, mechanical, and flame-retardant properties. (**To be submitted**)
5. **Rahul Ranjan,** Manraj Kaur, Chavi and Prodyut Dhar, Sustainable phosphorylated and carbonized wheat straw aerogels for atmospheric water harvesting with enhanced reusability. (**To be submitted**)

**Patents**

1. Dhar P**, Ranjan R** and Rai R, “A method of preparation of a biodegradable packaging material from sugarcane bagasse”. (Indian Patent, Patent Application No.: 202411001028, Filed)
2. Dhar P**, Ranjan R** and Rai R, “A method of preparation of biodegradable packaging material from rice straws”. (Indian Patent, Patent Application No.: 202311061691, Filed)
3. Dhar P**,** Rai R, and **Ranjan R**, "Biodegradable bamboo-based drinking straws and a method of preparation thereof" (Indian Patent, Patent Application No: 202311002340, Published).
4. Smruti B Bhatt, **Ranjan R**, and Dhar P, “A process for fabricating a biodegradable packaging material” (Indian Patent, application no: 202411046355, Filed).

## Book Chapters

1. **Ranjan, R.,** Rai, R., & Dhar, P Sewage as substrate for value, Book Chapter in "Processing of Biomass Waste: Technological Upgradation and Advancement", Springer.
2. **Ranjan, R.,** Rai, R., & Dhar, P Cellulosic Nanomaterials and its derivatives from Agro-Waste for food packaging application, Book Chapter in Agro- Waste Derived Biopolymers and Biocomposites: Innovations and Sustainability in Food Packaging, John Wiley & Sons, Inc. LLC.

# Conference/Workshop Attended during PhD.

1. Oral presentation on the topic "**Sustainable manufacturing of functionalized gels for environmentally friendly transparent packaging materials featuring heat sealing, ultrasonic sealing, and flame retardancy**" at the American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.
2. Oral presentation on the topic "**Development of *Aspergillus Niger* based, living 3D-printed structures for the decolourization of Congo red dye**" at American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.
3. Poster presentation on "**Utilizing natural plant fibres to fabricate films: A sustainable solution for food packaging**" at American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.
4. Poster presentation on "**Functionalized jute: A biodegradable material with high charge, swellability, flame retardancy, and thermal stability**" at American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.
5. Poster presentation on "**All-cellulose phosphate-based bamboo-inspired aerogel wall for thermal cooling application**" at American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.
6. Poster presentation on "**All-cellulose phosphate functionalized rice straw-based sustainable packaging material**" at American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.

7. Poster presentation on "**Sustainable packaging solutions from waste sugarcane bagasse: All-cellulose phosphate functionalization**" at American Chemical Society (ACS) Spring 2024 in New Orleans, USA, from March 17-21, 2024.
8. Poster presentation on "**Rice straw-based packaging film**" at the 17th International Conference on Polymer Science and Technology - SPSI-Macro 2023, organized by IIT Guwahati, from December 10-13, 2023.
9. Poster presentation on the topic "**Additive manufacturing assisted 3D-printed cellulose phosphate: an emerging and effective biomaterial for Methylene blue remediation**" at the Advances in Biopolymers and Composites: Health, Environment, and Energy (ABC-HEE,2022) organized by MNNIT Allahabad.