

List of Publications

Publications based on works reported in this thesis

Journal Papers (Published)

1. **Varshney N**, Sahi, AK, Poddar S, Vishwakarma NK, Kavimandan G, Prakash A, & Mahto SK (2022). Freeze–Thaw-Induced Physically Cross-linked Superabsorbent Polyvinyl Alcohol/Soy Protein Isolate Hydrogels for Skin Wound Dressing: In Vitro and In Vivo Characterization. *ACS Applied Materials & Interfaces*. [I.F. 9.229]
2. **Varshney N**, Sahi AK, Poddar S, and Mahto SK (2020). Soy Protein Isolate Supplemented Silk Fibroin Nanofibers for Skin Tissue Regeneration: Fabrication and Characterization. *International Journal of Biological Macromolecules*. [I.F. 6.953]
3. **Varshney N**, Sahi AK, Vajanthri KY, Poddar S, Balavigneswaran CK, Prabhakar A, Rao V and Mahto SK (2019). Culturing Melanocytes and Fibroblasts within Three-dimensional Macroporous PDMS Scaffolds: Towards Skin Dressing Material. *Cytotechnology*, 71 (1): 287-303. [I.F. 2.362]

Journal Papers (Under Review/ In Preparation)

1. **Varshney N**, Singh P, Rai R, Vishwakarma NK, and Mahto SK. Chemically Cross-linked Superporous Soy Protein Isolate Cryogels for Skin Wound Dressing: In Vitro and In Vivo Characterization (*Under revision*).
2. **Varshney N**, Singh P, Sigh R, and Mahto SK. Soy Protein in Health Care: A Review.

Publications based on works not reported in thesis

Journal Papers (Published)

1. Sahoo, K., **Varshney, N.**, Das, T., Mahto, S. K., & Kumar, M. (2023). Copper oxide nanoparticle: multiple functionalities in photothermal therapy and electrochemical energy storage. *Applied Nanoscience*, 1-22. [I.F. 4.288]
2. Gundu S, Sahi AK, **Varshney N**, and Mahto SK (2022). Fabrication and In Vitro Characterization of Luffa Based Composite Scaffolds with Gelatin, Hydroxyapatite and Psyllium Husk for Bone Tissue Engineering. *Journal of Biomaterials Science: Polymer Edition* (Accepted). [I.F. 3.517]
3. Gundu S[#], **Varshney N[#]**, Sahi AK and Mahto SK (2022). Recent Developments of Biomaterial Scaffolds and Regenerative Approaches for Craniomaxillofacial Bone Tissue Engineering. *Journal of Polymer Research*, 29, 73. [I.F. 3.097] # **equal contribution**
4. Kumar R, **Varshney N**, Mahapatra S, Mahto SK, Dubey VK, and Chandra P (2022). Design and Development of Lactoferrin Conjugated Lipid-polymer Nano-bio-hybrid for Cancer Theranostics. *Materials Today Communications*. [I.F. 3.383]
5. Sahi AK, Verma P, **Varshney N**, Gundu S, & Mahto SK (2022). Revisiting Methodologies for In Vitro Preparations of Advanced Glycation End Products. *Applied Biochemistry and Biotechnology*, 1-25. [I.F. 2.926]
6. Agarwal PS, Agarwal P, Sahi AK, Sushmitha P, **Varshney N**, Poddar S, and Mahto SK (2022). "Revisiting Efforts and Advancements in Tracheal Tissue Engineering". *Respiration*. [I.F. 3.580]
7. Sahi AK, **Varshney N**, Poddar S, Gundu S, and Mahto SK (2021). Fabrication and Characterization of Silk Fibroin-Based Nanofibrous Scaffolds

Supplemented with Gelatin for Corneal Tissue Engineering. *Cells Tissues Organs*, 210(3), 173-194. [I.F. 2.064]

8. Agarwal PS, Poddar S, **Varshney N**, Sahi AK, Vajanthri KY, Yadav K, and Mahto SK (2021). Printability Assessment of Psyllium Husk (Isabgol)/Gelatin Blends using Rheological and Mechanical Properties. *Journal of Biomaterials Applications*, 35(9), 1132-1142. [I.F. 2.646]
9. Poddar S, Agarwal PS, Sahi AK, **Varshney N**, Vajanthri KY, and Mahto SK (2021). Fabrication and Characterization of Electrospun Psyllium Husk-based Nanofibers for Tissue Regeneration. *Journal of Applied Polymer Science*, 138(24), 50569. [I.F. 3.125]
10. Viswanadh MK, Mehata AK, Sharma V, Priya V, **Varshney N**, Mahto SK, and Muthu MS (2021). Bioadhesive Chitosan Nanoparticles: Dual Targeting and Pharmacokinetic Aspects for Advanced Lung Cancer Treatment. *Carbohydrate Polymers*, 118617. [I.F. 9.381]
11. Kumar CS, Singh G, Poddar S, **Varshney N**, Mahto SK, Podder A, Chattopadhyay K, Rastogi A, and Mahobia GS (2021). High-manganese and Nitrogen Stabilized Austenitic Stainless Steel (Fe-18Cr-22Mn-0.65 N): A Material with a Bright Future for Orthopedic Implant Devices. *Biomedical Materials*. [I.F. 3.715]
12. Sahi AK, **Varshney N**, Poddar S, and Mahto SK (2020). Comparative Behaviour of Electrospun Nanofibers Fabricated from Acid and Alkaline Hydrolysed Gelatin: Towards Corneal Tissue Engineering. *Journal of Polymer Research*, 27(11), 1-15. [I.F. 3.097]
13. Sahi AK, Anjali, **Varshney N**, Poddar S, Vajanthri KY, and Mahto SK (2019). Optimizing a Detection Method for Estimating Polyunsaturated Fatty Acid in

Human Milk based on Colorimetric Sensors. *Materials Science for Energy Technologies*, 2(3), 624–628.

Journal Papers (Under Review/ In Preparation)

1. **Varshney N**, Singh P, and Mahto SK. “Comparative Study of Different Drying Process: Effect on Scaffold Morphology”.
2. Singh P, **Varshney N**, Singh R, Yadav N, Rai S, Chaurasia P, Mahto SK. “siRNA loadanoparticles: a potent skin cancer therapy”.
3. Kumar P, **Varshney N**, Mahto SK and Chattopadhyay K. “Influence of Annealing on Corrosion Behaviour of Surface Nanostructured Ti-13Nb-13Zr Alloy in Ringer’s Solution”.
4. Sonam, Tripathi P, **Varshney N**, Mohan D, Mahto SK, and Singh RS. “Biodegradation of Imidacloprid by Novel Bacterial Species and Eco Toxicological Assessment.
5. Poddar S, Sahi AK, **Varshney N**, and Mahto SK. “Application of Psyllium Husk Based Polysaccharides in Tissue Engineering: Recent Progress and Future Prospects.”
6. Singh R, **Varshney N**, and Mahto SK. “Recent Efforts and Advances for Management of COVID-19”.
7. Sahi AK, **Varshney N**, Gundu S, and Mahto SK. “Preparation and Characterization of Decellularized Cornea using Chemical Detergents for Corneal Tissue Engineering”.
8. Sahi AK, **Varshney N**, Gundu S, and Mahto SK. “Behavior of Corneal Fibroblast Cell Line on Modified Substrate Surface.”

Patent Applications

1. Mahto SK, **Varshney N**, “A Superabsorbent Biodegradable and Biocompatible Soy-based Hydrogel Scaffold Composition and Method of Preparation Thereof.” Application ID IPR/2021-22/003.
2. Mahto SK, **Varshney N**, Sahi AK, "Soy-based Electrospun Nanofibrous Sheet and Method of Electrospinning Thereof." Patent Application No: 202011018560.
3. Mahto SK, **Varshney N**, Sahi AK, “A Non-invasive Polymeric Wound Closure Device”. Application filed to Institute IPR Cell on October 9, 2019. Application ID: IPR/2019-20/008.
4. Mahto SK, Gundu S, Sahi AK, **Varshney N**, “Luffa-based Three Dimensional Composite Scaffolds using Freeze Drying Technique.” Application ID IPR/2021-22/004.

Book Chapter (Published)

1. Sahi AK, **Varshney N**, Sidu RK, Poddar S, Pallawi, Singh K, and Mahto SK, (2021). “Clinical Implications of Cortisol and Bioanalytical Methods for Their Determination in Various Biological Matrices. In: Suman P., Chandra P. (eds) Immunodiagnostic Technologies from Laboratory to Point-Of-Care Testing”. Springer, Singapore. (https://doi.org/10.1007/978-981-15-5823-8_11)

International Conferences (Presented)

1. **Varshney N**, Mahto, SK. (2021) “Development of Plant Protein Based Wound Dressing”. *Advanced Materials for Better Tomorrow (AMBT-2021): Impacting Energy, Health, and Environment conference* at IIT (BHU), Varanasi, India, from 13-17 July 2021. **(Awarded for poster presentation)**
2. Sahi AK, Rai S, **Varshney N**, Gundu S, and Mahto SK, “Prefilled Dual Chamber Syringe for Drug Delivery” in *iCBIT Bio-ideathon '21*” Department of Biotechnology, CBIT, Hyderabad, India, 12th November 2021. **(Awarded 1st prize in oral presentation)**
3. **Varshney N**, Sahi AK, and Mahto SK (2020), “Fabrication and Characterization of Soy Protein Based Electrospun Nanofibers Towards Skin Tissue Engineering”, *International Conference on Bioengineering & Regenerative Medicine-2020 (ICBR 2020)*, IIT (BHU), Varanasi, India. **(Awarded 1st prize in poster presentation)**
4. **Varshney N**, Sahi AK, and Mahto SK (2019), “Development and Characterization of a Polymeric Scaffold as a Wound Dressing Material”. *Annual Next-Gen Tissue Engineering and Regenerative Medicine*, from 14-15 October 2019, Singapore city, Singapore, 2019.
5. **Varshney N**, Sahi AK, and Mahto SK (2019), “Optimization and Development of Natural Protein Based Electrospun Composite Scaffolds for Tissue Engineering Applications”, *Biomaterial-Based Therapeutic Engineering and Regenerative Medicine (BioTERM 2019)*, 28th Nov-01st Dec, 2019, IIT Kanpur, India.

6. **Varshney N**, Sahi AK, and Mahto SK (2019), “Drug Loaded Non-invasive Wound Closure Device”, *2nd National Biomedical Research Competition (NBRCOM-2019)*, PGIMER, Chandigarh, India.
7. **Varshney N**, Sahi AK, and Mahto SK (2019), “A PDMS Based Non-Invasive Wound Closure Device Preloaded with Drug”, *Idea Exposition on Bio Engineering and Healthcare*, 11- 12 October, 2019, BHU & IIT BHU, Varanasi. (Top 3 innovations)
8. **Varshney N**, Sahi AK, and Mahto SK (2018), “Fabrication of Macroporous Three dimensional PDMS Scaffold for Tissue Engineering Application”, *International conference on Biomaterials, Bio-Engineering, and Bio-Theragnostics (BioMET-2018)*, Vellore, India.
9. **Varshney N**, Sahi AK, and Mahto SK (2018), “Poly (dimethylsiloxane) Based Three Dimensional Scaffold for Skin Tissue Engineering”. *Institute day* 16-18 February, 2018, Indian Institute of Technology (Banaras Hindu University), Varanasi. (Best 10 posters)
10. Gundu S, **Varshney N**, Sahi AK, and Mahto SK (2020), “Fabrication and Optimization of Micro- and Nanoparticles of *Luffa Cylindrica* (Sponge Gourd) in Hard Tissue Engineering” *International Conference on Bioengineering & Regenerative Medicine-2020 (ICBR 2020)*, IIT (BHU), Varanasi, India.
11. Sahi AK, **Varshney N**, Mahto SK (2019), “Fabrication of Silk-Gelatin Based Corneal Analogs using Electrospinning Technique”, *Annual Next-Gen Tissue Engineering and Regenerative Medicine Conference*, scheduled on October 14-15, 2019 at Singapore City, Singapore, 2019.

12. Sahi AK, Varshney N, Gundu S, and Mahto SK (2020), “Electrospun Silk-Gelatin based Scaffold Towards Corneal Tissue Engineering”, *International Conference on Bioengineering & Regenerative Medicine-2020 (ICBR 2020)*, IIT (BHU), Varanasi, India.

Workshops and Hands-on-trainings

1. Participated in national conference on “Computational and Biochemical Drug Discovery” organized by DST funded I-DAPT Hub foundation IIT (BHU) Varanasi, and School of Biochemical Engineering, IIT (BHU) Varanasi jointly with Bioinformatics and Drug Discovery Society (BIDDS), 11-12th September, 2021.
2. Participated in ‘Bio-Startups’: The journey from Idea to reality organized by I-DAPT Hub Foundation and School of Biochemical Engineering, IIT (BHU) Varanasi, 4th September, 2021.
3. Participated in a device design challenge hands-on-workshop organised by Collaborative Medical Device Design Initiative (CO-MEDDI) in collaboration with King George's Medical University, Lucknow, Uttar Pradesh, India. (February 25-27, 2020)
4. A GIAN course on “Hepatic and Bone Tissue Development for Drug Metabolism and Tissue Engineering”, organized by IIT Kanpur, India, April, 01-05th, 2019.
5. “National Life Science Entrepreneurship Awareness Programme”, Banaras Hindu University, Varanasi, 21st, February, 2019.
6. Participated in three-day Workshop on “Innovative Design & Manufacturing Education” supported by Pandit Madan Mohan Malaviya National Mission on

Teachers and Teaching (PMMMNMTT), IIT(BHU), Varanasi, India (7-9th April 2018).

7. Workshop on “IP & Tech Management in Life Sciences”, IIT Kanpur, India, December, 04-05th, 2018.
8. Volunteered one-day Brainstorming workshop on establishing “Centre for Advanced Biomaterials and Tissue Engineering” Indian Institute of Technology (Banaras Hindu University), Varanasi, India (Mar. 19, 2018).
9. “LaTeX for Beginners”, jointly organized by IEEE IAS student chapter & IEEE student chapter on 06th, October 2018.
10. Pre-conference workshop on BioMaterials, BioEngineering & BioTheranostics [BioMET-2018] Vellore, India, July, 24-25th, 2018.
11. Successfully completed the Workshop on ÄKTA, organized by School of Biochemical Engineering, IIT(BHU), Varanasi, India (10-11th august 2017).
12. An Introductory Course on Flow Cytometry jointly organized by BD Biosciences and Department of Biotechnology, IIT Madras from 29-30th June, 2017.