

## Amit Kumar Singh



**Designation:** Assistant Professor

**Email ID:** amitk.nitrkl@gmail.com

**Qualification:** B.Tech, M.Tech and Ph.D\*

**Area of Specialization:** Biomaterial and Tissue Engineering, Bio-Implant surface modification, Food packaging material

**Research Interest:** Bone, skin and cartilage tissue regeneration, herbal based Biomaterial for tissue engineering, wound healing, bioceramics and nanoparticles synthesis and application in tissue engineering and antimicrobial property, waste by product to biomaterial application and Surface modification and functionalization of bone implant. Edible film for packaging application.

### **EDUCATIONAL QUALIFICATIONS:**

- ❖ **Doctor of Philosophy (Ph.D)** in Biomedical Engineering, Department of Biotechnology and Medical Engineering, National Institute of Technology, Rourkela, India.
  - Field of research: Biomaterial and Tissue Engineering Biomaterial and Tissue Engineering field with thesis entitled “Development of sodium alginate/chitosan based nano-composite three-dimensional printed scaffolds for bone tissue regeneration.”
- ❖ **Master of Technology (M.Tech)** in Biomedical Engineering, Department of Biotechnology and Medical Engineering, National Institute of Technology, Rourkela, India.
  - Field of research: Biomaterial and Tissue Engineering.
- ❖ **Bachelor of Technology (B.Tech)** in Electronics and Instrumentation Engineering, Hindustan College of Science and Technology (UPTU), Mathura, India.

## ACADEMIC AND RESEARCH EXPERIENCE:

Worked as an Assistant professor

- ❖ June 2023 to Present in Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Dr. D. Y. Patil Vidyapeeth, Pune.

Worked as a Teaching Assistant

- ❖ Biomaterials and Tissue engineering
- ❖ Computer aided Tissue Engineering Laboratory July 2014 – April 2015
- ❖ Computer aided Tissue Engineering Laboratory July 2015 – December 2019
- ❖ Scaffold fabrication techniques Laboratory July 2019-December 2019

## AWARDS AND ACHIEVEMENTS:

- ❖ Second prize in poster presentation in PRAYASH 2023 with title “Design of engineered skin substitute using electrospinning and 3D printing for burn patients.”
- ❖ Best poster award in NCTERM 2017 with title “Fabrication of scaffold by Rapid Prototyping for tissue engineering application.”

## PUBLICATIONS:

- ❖ Partha Sarathi Majhi, Krishna Pramanik and **Amit Kumar Singh**. “Fabricating a novel bioinspiring 3D printed sodium alginate/silk fibroin/polyvinyl alcohol/nano-hydroxyapatite composite scaffold structure for bone tissue engineering application” (accepted, SCI, IF: 3.2).
- ❖ Sebastian, K. Kiran, **Amit Kumar Singh**, and Amit Biswas. "Strontium doped 58S bioglass incorporated chitosan/gelatin porous scaffold for bone tissue engineering applications." *International Journal of Biological Macromolecules* (2024): 136983. (SCI, IF: 7.7)
- ❖ Dey, Sovan, **Amit Kumar Singh**, Soumya Shuvra Smita, Amit Biswas, and Sachin Kumar. "Development of Quercetin-loaded polyvinyl-alcohol/gelatin nanofibrous coating over Ti–6Al–4V bone implant with improved antibacterial and bioactive characteristics." *Journal of Materials Science* 59, no. 26 (2024): 11799-11816. (SCI, IF: 3.5)
- ❖ Raju, Konduru Ashok Kumar, Amit Biswas, **Amit Kumar Singh**, Yogendra Mahton, and Partha Saha. "Enhanced corrosion resistance of 58S bioglass integrated TiO<sub>2</sub> nanotubular arrays." *Next Nanotechnology* 6 (2024): 100070.
- ❖ **Amit Kumar Singh**, Krishna Pramanik “Constructing a biofunctionalized 3D printed gelatin/sodium alginate/chitosan tri-polymer complex scaffold with Improved biological and mechanical property for bone tissue engineering.” (accepted in *Bio-Design and Manufacturing*, SCI, IF: 8.1)
- ❖ **Amit Kumar Singh**, and Krishna Pramanik. "Fabrication and investigation of physicochemical and biological properties of 3D printed sodium alginate-chitosan blend polyelectrolyte complex scaffold for bone tissue engineering application." *Journal of Applied Polymer Science*: e53642. (SCI, IF: 2.7)
- ❖ Verma, Nishchay, Krishna Pramanik, **Amit Kumar Singh**, and Amit Biswas. "Design of magnesium oxide nanoparticle incorporated carboxymethyl cellulose/poly vinyl alcohol

composite film with novel composition for skin tissue engineering." *Materials Technology* 37, no. 8 (2022): 706-716. (SCI, IF: 2.9)

- ❖ **Amit Kumar Singh**, Pramanik, K. and Biswas, A., 2019. MgO enables enhanced bioactivity and antimicrobial activity of nano bioglass for bone tissue engineering application. *Materials Technology*, 34(13), pp.818-826. (SCI, IF: 2.9)
- ❖ **Amit Kumar Singh**, Pramanik, K., 2018. Stem Cell Based Tissue-Engineered Grafts for Articular Cartilage Defects- a Mini Review. *Biomedical Journal of Scientific & Technical Research*, ISSN: 2574-1241. (Google scholar, IF: 1.229)

### **CONFERENCES (Abstracts/Oral/Poster):**

- ❖ A Buddhirajua, **Amit Kumar Singh** and K Pramanik, 2023. "Design of engineered skin substitute using electrospinning and 3D printing for burn patients." National conference on Recent Advancement in Pharmaceutical Research and Biomedicine- PRAYASH 2023. Dr. Ambedkar Institute of Pharmaceutical Science, Bangurkela, Odisha, India
- ❖ V Chaudhary, **Amit Kumar Singh**, K Pramanik., 2019. "Development of novel biopolymeric scaffold as a platform for skin tissue regeneration. International Conference On "Advancement of Biotechnology in Healthcare, Bioproducts and Environmental Research" (CABHBE19), GIET University, Gunupur, Odisha, India.
- ❖ K Kaiwart, **Amit Kumar Singh**, K Pramanik., 2019. Fabrication of Chitosan/ Sodium alginate 3d porous scaffold for ligament tissue engineering application. International Conference On "Advancement of Biotechnology in Healthcare, Bioproducts and Environmental Research" (CABHBE19), GIET University, Gunupur, Odisha, India.
- ❖ **Amit Kumar Singh** & K. Pramanik, 2017. "Fabrication of scaffold by Rapid Prototyping for tissue engineering application". National Conference on Tissue Engineering and Regenerative Medicine. Department Biotechnology and Medical Engineering, National Institute of Technology, Rourkela, India.
- ❖ **Amit Kumar Singh**, K Pramanik., 2017. Fabrication of functionalized 3D composite scaffold by Rapid Prototyping for Bone tissue engineering application. International Conference on Recent Advances in Materials Chemistry, Utkal University, Bhubaneswar, India.

### **BIOINFORMATICS AND BIOTECHNOLOGY SKILLS:**

- ❖ Biomaterial processing, scaffold fabrication techniques including Lyophilizer (freeze-dryer), Electrospinning, 3D printing, salt-leaching, 2D film formation,
- ❖ Different characterization techniques including SEM, XRD, FTIR, UV-visible spectroscopy, Inverter microscopy, confocal microscopy Universal testing machine.
- ❖ Animal cell culture
- ❖ Microbial culture and antimicrobial study