

Curriculum Vitae

Abhishek Sahu

Assistant Professor
Department of Biotechnology
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PROFESSIONAL EXPERIENCE

- **December 2021 – Present**
Assistant Professor
Department of Biotechnology
NIPER Hajipur
Hajipur, India.
- **March 2014 – December 2021**
Research Fellow (Research Assistant Professor)
School of Materials Science and Engineering,
Gwangju Institute of Science and Technology (GIST)
Gwangju, Republic of Korea.
- **October 2010 – May 2013**
Post-Doctoral Researcher
School of Materials Science and Engineering,
Gwangju Institute of Science and Technology (GIST),
Gwangju, Republic of Korea.
- **November 2009 – September 2010**
Post-Doctoral Researcher
Institute of Biomedical Engineering (INEB),
Faculty of Engineering University of Porto (FEUP),
Porto, Portugal.

ACADEMIC QUALIFICATION

- **Ph.D.** (Biotechnology) - Indian Institute of Technology Guwahati (IIT Guwahati), 2009
- **B.Tech** (Biotechnology) - West Bengal University of Technology (WBUT), 2005

RESEARCH AREA

- Nanozyme and their biomedical application
- Polymer-antioxidant/drug conjugates
- Novel Biomaterials

PUBLICATIONS

1. A. Das, S. Dey, R.N. Yadav, P. Dutta, S. Dhiman, P.J. Boruah, K. Sarkar, **A. Sahu**, A. Jana, A.K. Paul and Md. F. Hossain. Unleashing naphthopyranopyrimidine's anticancer potential: a deep eutectic solvent (DES) study. *New Journal of Chemistry* 48, 7566-7578, 2024. [IF: 2.7]
2. M.A.A. Abdelaziz, **A. Sahu** and P. Ramalingam. Pentacyclic triterpenoids from the stem of *Grewia bracteata* Roth demonstrate promising inhibition on tumour cells. *Natural Product Research* 38(4), 624-628, 2024. [IF: 2.488]
3. K. Min, **A. Sahu**, S.H. Jeon, and G. Tae. Emerging drug delivery systems with traditional routes – A roadmap to chronic inflammatory diseases. *Advanced Drug Delivery Reviews* 203, 115119, 2023. [IF: 16.1]
4. **A. Sahu***, K. Min*, K. Kwon and G. Tae. Self-assembled hemin-conjugated heparin with dual-enzymatic cascade reaction activities for acute kidney injury. *Carbohydrate Polymers* 316, 121088, 2023. [*Equal contribution] [IF: 11.2]
5. K. Kwon, J. Jung, **A. Sahu** and G. Tae. Nanoreactor for cascade reaction between SOD and CAT and its tissue regeneration effect. *Journal of Controlled Release* 344, 160-172, 2022. [Selected as a **Front Cover** article] [IF: 10.8]
6. **A. Sahu***, J. Jeon*, M.S. Lee, H.S. Yang and G. Tae. Nanozyme impregnated mesenchymal stem cells for hepatic ischemia-reperfusion injury alleviation. *ACS Applied Materials and Interfaces* 13(22), 25649-25662, 2021. [*Equal contribution] [Selected as a **Supplementary Cover** article] [IF: 9.5]
7. **A. Sahu***, J. Jeon*, M.S. Lee, H.S. Yang and G. Tae. Antioxidant and anti-inflammatory activities of Prussian blue nanozyme promotes full-thickness skin wound healing. *Materials Science and Engineering C* 119, 111596, 2021. [*Equal contribution] [IF: 8.457]
8. **A. Sahu**, K. Min, J. Jeon, H.S. Yang and G. Tae. Catalytic nanographene oxide with hemin for enhanced photodynamic therapy. *Journal of Controlled Release* 326, 442-454, 2020. [IF: 10.8]
9. **A. Sahu**, I. Kwon and G. Tae. Improving cancer therapy through the nanomaterials-assisted alleviation of hypoxia. *Biomaterials* 228, 119578, 2020. [IF: 14]
10. M. Kim*, **A. Sahu***, Y. Hwang, G.B. Kim, G.H. Nam, I.S. Kim, I.C. Kwon and G. Tae. Targeted delivery of anti-inflammatory cytokine by nanocarrier reduces atherosclerosis in Apo E^{-/-} mice. *Biomaterials* 226, 119550, 2020. [*Equal contribution] [IF: 14]
11. W.I. Choi, **A. Sahu**, F.R. Wurm and S-M. Jo. Magnetoliposomes with size controllable insertion of magnetic nanoparticles for efficient targeting of cancer cells. *RSC Advances* 9, 15053-15060, 2019. [IF: 3.9]
12. W.I. Choi, Y. Hwang, **A. Sahu**, K. Min, D.K. Sung, J.H. Chang and G. Tae. An injectable and physical levan-based hydrogel as a dermal filler for soft tissue augment. *Biomaterials Science*, 6, 2627-2638, 2018. [IF: 6.6]
13. **A. Sahu**, Y.M Hwang, C. Vilos, J.M. Lim, S.H. Kim, W.I. Choi and G. Tae. A novel alendronate functionalized nanoprobe for simple colorimetric detection of cancer-associated hypercalcemia. *Nanoscale* 10, 13375-13383, 2018. [IF: 6.7] (Selected as **Back Cover**)

14. **A. Sahu**, W.I. Choi and G. Tae. Recent progress in the design of hypoxia-specific nano drug delivery systems for cancer therapy. *Advanced Therapeutics*, 1, 1800026, 2018. [IF: 4.6] [Invited Review]
15. K. Gwon, E.J. Jo, **A. Sahu**, J.Y. Lee, G. Tae and M.G. Kim. Improved near infrared-mediated hydrogel formation using diacrylated Pluronic F127-coated upconversion nanoparticles. *Materials Science and Engineering C* 90, 77-84, 2018. [IF: 8.457]
16. M. Kim, **A. Sahu**, G.B. Kim, G.H. Nam, W. Um, S.J. Shin, Y.Y. Jeong, I.S. Kim, K. Kim, I.C. Kwon and G. Tae. Comparison of in vivo targeting ability between cRGD and collagen-targeting peptide conjugated nano-carriers for atherosclerosis. *Journal of Controlled Release* 269, 337-346, 2018. [IF: 10.8]
17. **A. Sahu**, M. Kim, J. Ryu, J.G. Son, E. Lee, D.Y. Noh and G. Tae. Nanographene oxide as a switch for CW/pulsed NIR laser triggered drug release from liposomes. *Materials Science and Engineering C* 82, 19-24, 2018. [IF: 8.457]
18. W.I. Choi, **A. Sahu**, C. Vilos, N. Kamaly, S.M. Jo, J.H. Lee and G. Tae. Bioinspired heparin nanosponge prepared by photo-crosslinking for controlled release of growth factors. *Scientific Reports* 7, 14351, 2017. [IF: 4.996]
19. W.I. Choi, B. Yameen, C. Vilos, **A. Sahu**, S.M. Jo, D. Sung and G. Tae. Optimization of fibrin gelation for enhanced cell seeding and proliferation in regenerative medicine applications. *Polymers for Advanced Technologies* 28, 124-129, 2017. [IF: 3.4]
20. **A. Sahu**, J.H. Lee, H.G. Lee, Y.Y. Jeong and G. Tae. Prussian blue/serum albumin/indocyanine green as a multifunctional nanotheranostic agent for bimodal imaging guided laser mediated combinatorial phototherapy. *Journal of Controlled Release* 236, 90-99, 2016. [IF: 11.467]
21. J.H. Lee, **A. Sahu**, W.I. Choi, J.Y. Lee and G. Tae. ZOT-derived peptide and chitosan functionalized nanocarrier for oral delivery of protein drug. *Biomaterials* 103, 160-169, 2016. [IF: 14]
22. W.I. Choi*, **A. Sahu***, C. Vilos, J.H. Lee, S. Kim, Y.K. Hong, D. Sul, S. Hwang, S.H. Lee and G. Tae. Chitosan functionalized thermosponge nano-carriers for prolonged retention and local delivery of chymopapain at the nucleus pulposus in porcine discs *ex vivo*. *RSC Advances* 6, 90967-90972, 2016. [*Equal contribution] [IF: 3.9]
23. C. Jang, J.H. Lee, **A. Sahu** and G. Tae. Synergistic effect of folate and RGD dual ligand of nanographene oxide on tumor targeting and photothermal therapy in vivo. *Nanoscale* 7(44), 18584-18594, 2015. [IF: 6.7]
24. J.H. Lee*, **A. Sahu***, C. Jang and G. Tae. The effect of ligand density on in vivo tumor targeting of nanographene oxide. *Journal of Controlled Release* 209, 219-228, 2015. [*Equal contribution] [IF: 10.8]
25. **A. Sahu**, W.I. Choi, J.H. Lee and G. Tae. Graphene oxide mediated delivery of methylene blue for combined photodynamic and photothermal therapy. *Biomaterials* 34(26), 6239-6248, 2013. [IF: 15.304]
26. S.C. Rodrigues, C.L. Salgado, **A. Sahu**, M.P. Garcia, M.H. Fernandes and F.J. Monteiro. Preparation and characterization of collagen-nanohydroxyapatite biocomposite scaffolds by cryogelation method for bone tissue engineering applications. *Journal of Biomedical Materials Research Part A* 101A(4), 1080-1094, 2013. [IF: 4.9]
27. **A. Sahu**, W.I. Choi and G. Tae. A stimuli-sensitive injectable graphene oxide composite hydrogel. *Chemical Communications* 48(47), 5820-5822, 2012. [IF: 4.9] (Selected as **Inside Front Cover**)
28. W.I. Choi, **A. Sahu**, Y.H. Kim and G. Tae. Photothermal imaging and cancer therapy based on gold nanorods. *Annals of Biomedical Engineering* 40(2), 534-546, 2012. [IF: 3.8]
29. **A. Sahu**, N. Kasoju and U. Bora. Encapsulation of curcumin in pluronic block-copolymer micelles for drug delivery applications. *Journal of Biomaterials Applications* 25(6), 619-639, 2011. [IF: 2.9]
30. **A. Sahu**, P. Goswami and U. Bora. Microwave mediated rapid synthesis of chitosan. *Journal of Materials Science: Materials in Medicine* 20(1), 171-175, 2009. [IF: 3.7]

31. **A. Sahu**, N. Kasoju and U. Bora. Fluorescence study of curcumin-casein micelle complexation and its application as drug nanocarrier to cancer cells. *Biomacromolecules* 9(10), 2905-2912, 2008. [IF: 6.2]
32. **A. Sahu**, U. Bora, N. Kasoju and P. Goswami. Synthesis of novel biodegradable and self-assembling methoxy poly(ethylene glycol)-palmitate nanocarrier for curcumin delivery to cancer cells. *Acta Biomaterialia* 4(6), 1752-1761, 2008. [IF: 9.7]
33. S.S. Ali, N. Kasoju, A. Luthra, A. Singh, H. Sharanabasava, **A. Sahu** and U. Bora. Indian medicinal herbs as sources of antioxidants. *Food Research International* 41(1), 1-15, 2008. [IF: 8.1]
34. U. Bora, **A. Sahu**, A.P. Saikia, V.K. Ryakala and P. Goswami. Medicinal plants used by the people of Northeast India for curing malaria. *Phytotherapy Research* 21(8), 800-804, 2007. [IF: 7.2]

PATENTS (Granted)

1. G. Tae, **A. Sahu**, H.S. Yang and J. Jeon. Stem cell therapeutic agent for anti-inflammatory or damaged tissue regeneration containing Prussian blue nanoparticles, and method for manufacturing the same. Korea Intellectual Property Office, **Patent registration no KR 10-2476845**, Granted/Registered on 07th December, 2022.
2. G. Tae, **A. Sahu**, H.S. Yang and J. Jeon. Wound treatment and dressing material containing Prussian blue nanoparticles, and manufacturing method thereof. Korea Intellectual Property Office, **Patent registration no KR 10-2476844**, Granted/Registered on 07th December, 2022.
3. G. Tae, **A. Sahu** and J.H. Lee. Nanoparticles for diagnosis and treatment of tumors. United States Patent and Trademark Office, **Patent registration no US10973933B2**, Granted/Registered on 13th April, 2021.
4. G. Tae, **A. Sahu** and M. Kim. Nanographene oxide integrated liposome complex and drug delivery system comprising the same. Korea Intellectual Property Office, **Patent registration no KR 10-2110424**, Granted/Registered on 07th May, 2020.
5. W.I. Choi, G. Tae and **A. Sahu**. Thiolated alendronate functionalized gold nanoparticle and method for manufacturing thereof, applications thereof. Korea Intellectual Property Office, **Patent registration no KR 10-1992401**, Granted/Registered on 18th June, 2019.
6. G. Tae, J.H. Lee, **A. Sahu** and C. Jang. Nanographene oxide labelled with several ligands and preparation method thereof. Korea Intellectual Property Office, **Patent registration no KR 10-1846456**, Granted/Registered on 2nd April, 2018.
7. G. Tae, **A. Sahu** and J.H. Lee. Nanoparticles for diagnosis and treatment of tumor. Korea Intellectual Property Office, **Patent registration no KR 10-1739046**, Granted/Registered on 17th May, 2017.
8. G. Tae and **A. Sahu**. Composition for hydrogel based on graphene oxide being injectable and sensitive to external stimuli, method for preparing hydrogel using the same, and method for *in vivo* gelation using the same. Korea Intellectual Property Office, **Patent registration no KR 10-1381826**, Granted/Registered on 31st March, 2014.

PATENTS (Applied)

1. G. Tae, **A. Sahu**, K. Min, S.H. Jeon, and J.Y. Jung. Micelle nanoparticle comprising polymer-hemin complex and use thereof. Korea Intellectual Property Office, **Patent application no 1020240000118**, Date of application on 23rd July, 2024.
2. G. Tae, **A. Sahu**, H.S. Yang and J. Jeon. Cell therapeutic agent for anti-inflammatory or damaged tissue regeneration comprising Prussian blue nanoparticles, and method for preparing the same. United States Patent and Trademark Office, **Patent application publication US20220265724**, Date of application 07th January, 2022.

PROJECT GRANT

A. Ongoing

1. Startup Research Grant (SRG)

Funding agency: SERB / DST

Project title: Development of enzyme-mimicking polymeric nanomaterials for biomedical applications

Role: Principal Investigator (PI)

Sanctioned fund: INR 29.3 lakhs

Duration: 2 years (January 2023 to December 2024)