HIMANSHI JANGIR
Assistant Professor- Selection Grade
Primary Faculty: School of Health Sciences & Technology, University of Petroleum and Energy Studies (UPES)
Associated Faculty: Himalayan Institute for Learning and Leadership (HILL) UPES
Dehradun, Post Office Bidholi via- Prem Nagar, Dehradun, State: Uttarakhand, PIN 248007, India
Email: himanshi.jangir@ddn.upes.ac.in jangir.himanshi@gmail.com Cell: *+91-9606955650*
Website: *https://www.naturebiodesign.com/about-pi*

PROFILE

I am focused on *designing sustainable food security systems that integrate fodder and fiber economies for the Himalayan region* and impart discourses in *agro-biosystem design*.

EDUCATION

PhD (Design), 2018-2020, CGPA 10.0/10.0, IIT Kanpur, India
Thesis: Exploring sulfides to design strategies for sustainable agriculture and green energy

BT-MT Dual Degree (Biological Sciences and Bioengineering), 2013-2018, CGPA 7.5 and 9.5 respectively, IIT Kanpur, India
Thesis: Sequential entrapping of Li, S in a conductivity cage of N-doped reduced graphene oxide supercapacitor derived from silk cocoon: A hybrid Li-S-silk supercapacitor

EXPERIENCE

Assistant Professor- Selection Grade (April 2024- Onward): School of Health Sciences & Technology and Associated Faculty of Himalayan Institute for Learning and Leadership (HILL), University of Petroleum and Energy Studies (UPES) Dehradun, Post Office Bidholi Via- Prem Nagar, Dehradun 24800, India.

Post-Doctoral Fellow in Academia-Industry (September 2020- March 2024): Worked on human-on-a-chip systems at the Nanoscience Technology Center, University of Central Florida, and Hesperos Inc. Orlando, USA.

Senior Research Engineer (July 2020- December 2020): Worked on protein bio-battery at the Department of Biological Sciences and Bioengineering, IIT Kanpur, India.

COVID Project (April 2020- June 2020): Worked on a positive pressure respirator system at the Department of Design, IIT Kanpur, India.

AWARDS

2025: Debut Award in recognition of remarkable research and teaching performance during the year 2024; Manthan, January 11, 2025, UPES, Dehradun, Uttarakhand, India

2024: Recognition for securing an extramural grant, Utthan, August 30, 2024, School of Health Sciences and Technology Foundation Day, UPES, Uttarakhand, India

2024: 'Sree Padmavathi Venkateswara Foundation Agricultural Science Award,' Vijayawada, India
https://sreepvf.org/agricultural-science-awards-for-the-2024-competition-announced/
https://sreepvf.org/agricultural-research-grant-awardee-2024-2/
"This year's call for applications in the agricultural category received 145 submissions from institutions nationwide. Seeing proposals from remote and diverse regions, including Jammu & Kashmir, Arunachal Pradesh, and the Andaman and Nicobar Islands, was especially inspiring. The submissions spanned various agricultural advancements, from developments to innovative uses of IoT and AI technologies. After careful consideration, three exceptional projects were selected for awards this year."

2022: 'Travel Award' for 1st Micro-Physiological Systems World Summit; May 30- June 3, 2022, in New Orleans, USA

2020: 'Preeminent Postdoctoral Program (P^3) Fellowship' of University of Central Florida, Orlando, USA

2020: 'Outstanding Ph.D. Thesis Award', IIT Kanpur, India

2018: 'Academic Excellence Award' for 2013 batch dual degree student, IIT Kanpur, India

---

RESEARCH GRANTS AND EXTRAMURAL FUNDINGS

2024
Grant Title: A Novel Eco-Friendly Nano-Agriculture Strategy for Small-Marginal Farmers of Higher Himalayas: A Nano-Pyrite Based Seed/Root/Shoot Treatment Approach for Improving Potato Yield and Dairy Green Fodder Production.
Role: Principal Investigator
Funding Agency: Sree Padmavathi Venkateswara Foundation (Sree PVF), Vijayawada, Andhra Pradesh, India
Year: 2024-2026 (Extendable to 2027)
Amount: INR 47,96,000.00
Link: *https://sreepvf.org/agricultural-research-grant-awardee-2024-2/*

PATENTS

James J Hickman and **Himanshi Jangir**, "Mimicking the Tendon Microenvironment to Enhance Skeletal Muscle Adhesion and Longevity in a Functional Microcantilever Platform" U.S. Application No. 63/526,792, filing date July 14, 2023.

PUBLICATIONS (†CORRESPONDING AUTHOR, *EQUAL CONTRIBUTION)
Ø- HUMAN ON A CHIP
Ø- NANO-AGRICULTURE
Ø- GREEN ELECTRODE, PROTEIN BIO-BATTERY, AND BIO-HYBRID DEVICES

Ø14. Inhibition of metalloproteinases extends longevity and function of *in vitro* human iPSC-skeletal muscle
Natali H Barakat, **Himanshi Jangir**, Leandro H Gallo, Marcella Grillo, Xiufang H Guo, James J Hickman
Biomedicines 2024, 12(4), 856
DOI: https://doi.org/10.3390/biomedicines12040856

Ø13. Nano-pyrite as a plant hormone regulator: Emulating seed hormopriming
Brijesh Kaler, **Himanshi Jangir**, Sabyasachi Sarkar, Jayprakash Sharma, Mainak Das
Modern Agriculture (Wiley). 2024;e23
DOI: https://doi.org/10.1002/moda.23

Ø12. Sustainable nano-interventions to enhance crop yield, anthocyanin content, and marketability of onion (*Allium cepa*)
Himanshi Jangir, Brijesh Kaler, Gaurav Srivastava, Mainak Das
Frontiers in Nanotechnology (Section Environmental Nanotechnology: Nanotechnology for Food, Agriculture, and Sustainability)
Volume 5 - 2023
DOI: https://doi.org/10.3389/fnano.2023.1256439

Ø11. Mimicking tendon microenvironment to enhance skeletal muscle adhesion and longevity in a functional microcantilever platform
Himanshi Jangir, James J Hickman
ACS Biomaterials Science and Engineering, 2023 Jul 18.
DOI: https://pubs.acs.org/doi/10.1021/acsbiomaterials.3c00235

Ø10. Designing water vapour fuelled brine-silk cocoon protein bio-battery for a self-lighting kettle and water-vapor panels
Himanshi Jangir†, Mainak Das†
Nature Scientific Reports, 12 (13999), 2022
DOI: https://www.nature.com/articles/s41598-022-18211-x

Ø9. Fertilizer-free cultivation of wheat in nutrient-deficient soil by treating the seeds with nano pyrite
Himanshi Jangir, Amarjeet Bhardwaj, Gaurav Srivastava, Mainak Das
Nanotechnology for Environmental Engineering, 5 (1), Article number 9. April 5, 2020

DOI: https://doi.org/10.1007/s41204-020-00072-2

Ø8. Larger root nodules, increased Fe, Mo, Mg, P, Ca, Mn, K in the roots and higher yield in chickpea grown from nano FeS_2 pre-treated seeds: Emulating nitrogenase
Himanshi Jangir, Amar Bharadwaj, Mainak Das
Applied Nanoscience, Volume 10, Issue 2, p.445-454. 2019
DOI: https://doi.org/10.1007/s13204-019-01238-4

Ø7. 'Induced electron transfer' in silk cocoon derived N-doped reduced graphene oxide-Mo-Li-S electrode
Himanshi Jangir, Amarjeet Bhardwaj, Janakarajan Ramkumar, Sabyasachi Sarkar, Mainak Das
Frontiers in Materials (Carbon- and Inorganic-based Nanostructures for Energy Applications). 2019. Front. Mater. 6:217.
DOI: https://doi.org/10.3389/fmats.2019.00217

Ø6. Nano pyrite driven root foraging increases production of the heavy feeders, viz., cauliflower, cabbage and tomato in nutrient deficient soil with no fertiliser application
Himanshi Jangir, Amarjeet Bhardwaj, Gaurav Srivastava, Mainak Das
Advances in Natural Sciences: Nanoscience and Nanotechnology 10 (3), 035007, 2019
DOI: https://doi.org/10.1088/2043-6254/ab38b4

Ø5. Nano pyrite (FeS_2) root priming enhances chilli and marigold production in nutrients-deficient soil: A nano strategy for fertiliser tuning
Himanshi Jangir, Chinmaya Kumar Das, Jiten Kumar, Shyama S Mahapatra, Gaurav Srivastava, Amarjeet Bhardwaj, Mainak Das
Applied Nanoscience 9(3). 2019
DOI: https://doi.org/10.1007/s13204-018-00943-w

Ø4. Nano pyrite seed dressing: A sustainable design for NPK-equivalent rice production
Chinmaya Kumar Das*, **Himanshi Jangir***, Jiten Kumar, Shourya Verma, Shyama S Mahapatra, Deepu Philip, Gaurav Srivastava, Mainak Das
Nanotechnology for Environmental Engineering 3: 14. 2018
DOI: https://doi.org/10.1007/s41204-018-0043-1

Ø3. Biocharring of natural fibers of insect and plant origin: A green route for production of 'carbon based charge storage nanomaterials'
Amarish Dubey*, **Himanshi Jangir***, Shourya Verma, Manav Saxena, Sabyasachi Sarkar, Deepu Philip, Mainak Das
Materials for Renewable and Sustainable Energy 7: 20. 2018
DOI: https://doi.org/10.1007/s40243-018-0127-7

Ø2. Sequential entrapping of Li, S in a conductivity cage of N-doped reduced graphene oxide supercapacitor derived from silk cocoon: A hybrid Li-S-silk supercapacitor
Himanshi Jangir, Mohit Pandey, Rishabh Jha, Amarish Dubey, Shourya Verma, Deepu Philip, Sabyasachi Sarkar, Mainak Das
Applied Nanoscience 8: 379. 2018
DOI: https://doi.org/10.1007/s13204-018-0641-z

Ø1. An eco-friendly, low power charge storage device from bio-tolerable nano cerium oxide electrodes for bioelectrical and biomedical applications
Amarish Dubey, **Himanshi Jangir**, Mohit Pandey, Mayank Dubey, Shourya Verma, Manas Roy, Sushil Kumar Singh, Deepu Philip, Mainak Das
Biomedical Physics and Engineering Express 4(2). 2018
DOI: https://doi.org/10.1088/2057-1976/aaa282

CONFERENCE PAPERS

Ø4. Development of a human multi-organ micro physiological comorbidities model to investigate geriatric diseases

Stephanie Lang, **Himanshi Jangir**, Aakash Patel, Gaurav Srivastava, Russell Emmons, Tatiana Molden, James Hickman
Microphysiological Systems World Summit, June 10- June 14, 2024, Seattle, USA
Abstracts of the 3rd Microphysiological Systems World Summit, Seattle, 2024
https://virtual.oxfordabstracts.com/#/event/5059/submission/360

Ø3. A multi-organ human-on-a-chip system modeling chronic opioid overdose rescue efficacy and off-target toxicity
Aakash Patel, Gaurav Srivastava, Afeef Mahmud, Daniel Nierenberg, **Himanshi Jangir**, Justin Zuniga, Narsi Narasimhan, Christopher Long, Xiufang Guo, Patrick Tighe, Stephan Schmidt, Michael Schuler, James Hickman
Microphysiological Systems World Summit, June 10- June 14, 2024, Seattle, USA
Abstracts of the 3rd Microphysiological Systems World Summit, Seattle, 2024
https://virtual.oxfordabstracts.com/#/event/5059/submission/289

Ø2. Development of a functional sarcopenia model on a micro-cantilever platform for drug development efficacy evaluation
Himanshi Jangir, Leandro Gallo, Russell Emmons, James J Hickman
Microphysiological Systems World Summit, May 30- June 3, 2022, New Orleans, USA
Abstracts of the 1st Microphysiological Systems World Summit, New Orleans, 2022
Volume 10, No. 1 ISSN 2194-0479, Springer Spektrum (2022)
https://mpsworldsummit.com/wp-content/uploads/2022/05/altex_MPS1.pdf

Ø1. Maximizing skeletal muscle adhesion to enhance human neuromuscular junction integrity and function
Natali Barakat, Agnes Badu-Mensah, **Himanshi Jangir**, Christopher McAleer, Xiufang Guo, James J Hickman
Microphysiological Systems World Summit, May 30- June 3, 2022, New Orleans, USA
Abstracts of the 1st Microphysiological Systems World Summit, New Orleans, 2022
Volume 10, No. 1 ISSN 2194-0479, Springer Spektrum (2022)
https://mpsworldsummit.com/wp-content/uploads/2022/05/altex_MPS1.pdf

---

BOOK CHAPTERS

Ø2. Nano cerium oxide in medicine, agriculture, and the industry
Himanshi Jangir, Mainak Das
Book Title: Nanozymes in Medicine
1st Edition, Edited By Hemant Kumar Daima, Navya PN, and Eric Lichtfouse
Publisher: Springer Nature Switzerland AG Gewerbestrasse 11, 6330 Cham, Switzerland, Springer International Publishing (Verlag)
ISBN 978-3-031-20580-4
Published January 04, 2023

Ø1. Journey of nano iron pyrite from chemosynthetic world of hydrothermal vents to the photosynthetic world of agricultural field: A new class of seed and root bio-stimulant
Himanshi Jangir, Mainak Das
Book Title: Nanotechnology in Sustainable Agriculture
1st Edition, Edited By M. Anwar Mallick, Manoj K. Solanki, Baby Kumari, Suresh Kumar Verma
Publisher: CRC Press (Taylor andFrancis)
ISBN 9780367369408
Published July 9, 2021

MANUSCRIPT UNDER REVIEW

Ø1. Development of a functional sarcopenia model utilizing a microcantilever micro physiological system as a phenotypic disease model
Himanshi Jangir, Leandro H Gallo, Russell Emmons, James J Hickman

---

PRESS RELEASE ON SCIENTIFIC DISCOVERIES

2023: 'Working with biomaterials to add to the sustainable energy mix' by Archita Bhatta on 31 January 2023; *https://india.mongabay.com/2023/01/working-with-biomaterials-to-add-to-the-sustainable-energy-mix/*

2020: 'Nanotechnology applications can boost agricultural output in emergencies' by Sahana Ghosh on 18 May 2020; *https://india.mongabay.com/2020/05/nanotechnology-applications-can-boost-agricultural-output-in-emergencies/*

EDITORIAL RESPONSIBILITIES

Associate Editorial Board Member: *Modern Agriculture, Wiley*
Review Editor (Editorial Board): *Frontiers in Biomaterials Science (Bioinspired and Complex Materials)*
Review Editor (Editorial Board): *Frontiers in Chemistry and Frontiers in Sustainable Food Systems (Crop Biology and Sustainability)*

TEACHING

Spring 2025 (January- June): Courses Assigned

Elements of Design
BTech Biomedical Engineering (Semester IV)

Biomechanics
BTech Biomedical Engineering (Semester II)

Bioprocess Engineering (Theory plus Laboratory)
BTech Biotechnology (Semester IV)

Medical Physics and Biomedical Instrumentation (Theory plus Laboratory)
BTech Biomedical Engineering (Semester IV)

Tissue Engineering
BTech Biotechnology (Semester VIII)

Winter 2024 (December 2024- January 2025): Online Mode

Biomedical Engineering Fundamentals
MTech Medical Devices
Dr. Vishwanath Karad MIT World Peace University School of Health Science and Technology Kothrud, Pune, Maharashtra 411038

Fall 2024 (August- December): Courses Taught

Cell & Molecular Biology (Theory plus Laboratory)
B.Sc. Microbiology (Semester I)

Downstream Processing (Theory plus Laboratory)
B.Tech. Biotechnology (Semester V)

Ethics, IPR, & Regulations
B.Tech. Biotechnology (Semester III)
B.Tech. Biomedical Engineering (Semester III)

IPR & Scientific Writing
B.Tech. Biotechnology (Semester VII)
B.Tech. Food Technology (Semester VII)

Ethics & Regulatory Issues in Biotech Industries
B.Tech. Biotechnology (Semester VII)

STUDENT GUIDANCE

PhD

Mr Vaibhav Saini (SAP ID: 590019870)
Himalayan Institute for Learning and Leadership (HILL), UPES
Joining: February 2025
Proposed Thesis Title: *Sustainable Agro-Design to Enhance Potato and Fodder Production in Higher Himalayas*

BTech Project Guidance:

Mr Jay Sati (SAP ID: 500097198)
BTech Biotechnology
Joining: August 2024
Concluding: May 2025

Ms Barinda Garg (SAP ID: 500098078)
BTech Biotechnology
Joining: January 2025
Concluding: May 2025

REFERENCES (**UPON REQUEST**)