



UMT

UMT RESEARCH NEWSLETTER

Research Innovation and Knowledge Impact

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MESSAGE FROM VICE PROVOST RESEARCH

The third edition of the UMT Research Newsletter, Research, Innovation and Knowledge Impact, showcases another remarkable period of growth, collaboration, and academic excellence at the University of Management and Technology (UMT). This edition reflects the collective efforts of our faculty, researchers, students, and industry partners in advancing impactful research that addresses national priorities and global challenges. From the successful organization of the 3rd Research Conference on “Innovating for a Sustainable Future” and meaningful industry-academia engagement to strategic partnerships, competitive research funding, intellectual property development, and internationally recognized scholarly publications, these accomplishments demonstrate UMT’s unwavering commitment to fostering a vibrant research and innovation ecosystem. I invite you to explore this edition and celebrate the remarkable achievements that continue to shape the future of research, innovation, and commercialization at UMT.

PROF. DR. SAMMIA SHAHID

Vice Provost Research

ORIC UMT SUCCESSFULLY ORGANIZED THE 3RD UMT RESEARCH CONFERENCE ON INNOVATING FOR A SUSTAINABLE FUTURE

The Office of Research, Innovation and Commercialization (ORIC), University of Management and Technology (UMT) successfully organized the 3rd Research Conference under the inspiring theme, "Innovating for a Sustainable Future: Interdisciplinary Research, Technology, and Social Transformation."

The conference brought together distinguished academics, researchers, and institutional leaders to celebrate groundbreaking research and foster meaningful collaboration across disciplines. The event highlighted UMT's growing research ecosystem and its commitment to addressing global challenges

through innovation and evidence-based solutions.

One of the conference's major highlights was the presentation of research achievements by the Deans of UMT's Schools, who showcased impactful projects, interdisciplinary collaborations, and initiatives aligned with the United Nations Sustainable Development Goals (SDGs). These presentations reflected UMT's dedication to advancing scientific discovery, technological innovation, and research that contributes to sustainable development and positive societal transformation.

The conference served as a dynamic platform for knowledge exchange, inspiring researchers, faculty, and students to collaborate across disciplines and transform innovative ideas into real-world impact. Through initiatives like these, ORIC UMT continues to strengthen a culture of research excellence, innovation, and commercialization while positioning UMT as a leader in addressing the challenges of tomorrow.



INDUSTRY PANEL DISCUSSION SESSION ON DRIVING INNOVATION THROUGH COLLABORATIVE RESEARCH AND DEVELOPMENT ORGANIZED BY ORIC UMT IN 3RD UMT RESEARCH CONFERENCE

The Office of Research, Innovation and Commercialization (ORIC), University of Management and Technology (UMT) successfully organized Industry Panel Discussion: Bridging Academia and Industry – Driving Innovation through Collaborative Research and Development.

The panel discussion featured an esteemed lineup of

industry leaders and experts, including Prof. Dr. Humayun Riaz, Air Pharmaceuticals Pvt. Ltd.; Dr. Hajra Saleem, Evercare Hospital, Lahore; Dr. Ahmad Junaid Rashid, BF Biosciences Limited; Dr. Shoaib Hakeem, Dr. Masood Homoeopathic Pharmaceuticals Pvt. Ltd.; Dr. Mazhar Javed Awan, Systems Limited; Dr. Hamid Malik, Indus-Pak Corporation; Mr. Asif Rafique, Sapphire Textiles Mills; and Mr. Muhammad Ammar Zaid, Oxford University Press. Together, they shared valuable insights on strengthening industry-academia collaboration, fostering innovation, advancing research commercialization, and driving sustainable development through collaborative research and strategic partnerships.

It also emphasized the importance of collaborative innovation in advancing the United Nations Sustainable Development Goals (SDGs) and fostering a resilient, knowledge-driven economy.



UMT SIGNS LANDMARK MOU WITH TRADE DEVELOPMENT AUTHORITY OF PAKISTAN (TDAP) TO STRENGTHEN PAKISTAN'S INNOVATION AND STARTUP ECOSYSTEM

The University of Management and Technology (UMT) has signed a landmark Memorandum of Understanding (MoU) with the Trade Development Authority of Pakistan (TDAP), marking a significant step toward strengthening Pakistan's innovation and startup ecosystem.

The strategic partnership aims to bridge the gap between academia and industry by promoting

innovation, fostering entrepreneurship, and accelerating the commercialization startups. Through this collaboration, UMT and TDAP will work together to connect cutting-edge student ventures and emerging technologies with national and international markets, creating new opportunities for commercialization and sustainable growth.



This milestone reflects the shared commitment of University of Management and Technology UMT and Trade Development Authority of Pakistan TDAP to nurturing the next generation of Pakistani innovators, enhancing export-oriented entrepreneurship, and supporting the development of a knowledge-based, technology-driven economy. By combining academic excellence with industry expertise, the partnership is expected to contribute meaningfully to Pakistan's innovation landscape and long-term economic development.



DR. RABIA ALTAF, ASSOCIATE PROFESSOR AT THE SCHOOL OF PHARMACY, HAS SECURED TWO NATIONAL-LEVEL RESEARCH GRANTS ON VIRTUAL AUTISM, FUNDED BY ZMS DISTRIBUTORS

The University of Management and Technology (UMT) proudly announces that Dr. Rabia Altaf, Associate Professor at the School of Pharmacy, has secured two national-level research grants on virtual autism, funded by ZMS Distributors, with a combined value of \$0.5 million.

The first project, "Excessive Screen Exposure in

Children: Virtual Autism or ASD? A Cross-Sectional Study in Children Aged 0–4 Years," investigates the association between excessive screen exposure and developmental outcomes among young children.

The second project, "Comparative Analysis of Cognitive and Language Impairments in Virtual Autism: A Systematic Review," evaluates existing evidence on cognitive and language impairments associated with virtual autism.



DR. IRFAN BASHIR WINS HEC BEST UNIVERSITY TEACHER AWARD 2025

ORIC-UMT proudly congratulates Dr. Irfan Bashir, Associate Professor, Department of Education, School of Social Sciences and Humanities (SSSH), UMT, on receiving the prestigious HEC Best University Teacher Award 2025 in the field of Education. This distinguished national recognition celebrates his exceptional teaching excellence, academic leadership, research contributions, and unwavering commitment to student success.

Dr. Irfan Bashir has also been honored with the UMT Best Teacher Award, following his earlier recognition as the Best Teacher of SSSH during the 28th UMT Convocation, reflecting his sustained excellence and impactful contributions to higher education.



INTELLECTUAL PROPERTY FILED TO INTELLECTUAL PROPERTY ORGANISATION (IPO) PAKISTAN

1. Gluten-Free & Nut-Free High-Protein Powder (Patent)
2. Structurally Stable Gluten-Free Energy Bar (Patent)
3. Stabilized Functional Black Tea Composition (Patent)
4. Banana Leaf & Pea Peel Leather Substitute (Patent)
5. Waste Leather & Corn Artificial Leather (Patent)
6. Industrial, Ag & Leather Waste Floor Tiles (Patent)
7. Oryza Sativa & Cocos Nucifera Food Packaging (Patent)
8. Ag & Soft-Shell Waste Cellulosic Artificial Leather (Patent)
9. Plastic & Ag Hard-Shell Waste Floor Tiles (Patent)
10. Tripidium Bengalense & Walnut Shell Packaging (Patent)
11. Glass & Wood Waste Construction Floor Tiles (Patent)
12. Brick Kiln & Ag Shell Thin Floor Blocks (Patent)
13. Mango, Citrus & Sugarcane Bio-Based Leather (Patent)
14. Wood Boiler Ash & Leather Waste Floor Blocks (Patent)
15. Steel & Boiler Ash Waste Construction Floor Tiles (Patent)
16. Fermented Black Garlic & Roasted Walnut Pesto (Patent)



PUBLICATION SPOTLIGHT: UMT FACULTY PUBLISH HIGH-IMPACT RESEARCH IN LEADING INTERNATIONAL JOURNALS

Next generation nutraceuticals from Torreyia grandis bioactive peptides enabled by green extraction and biotechnological innovation toward future applications
(Impact Factor: 15.4)



This research, conducted by Durrani, R., Xu, D., Farag, M. A., Khan, S., Durand, E., Ullah, H., ... & Song, L., with Sohail Khalid, Professor in the Department of Computer Science, School of Systems and Technology (SST), University of Management and Technology (UMT), Pakistan, and published in Trends in Food Science & Technology, explores next-generation nutraceuticals from *Torreyia grandis* bioactive peptides enabled by green extraction and biotechnological innovation. The study highlights their potential to promote healthier lifestyles through sustainable, natural functional food ingredients with antioxidant, anti-inflammatory, and disease-preventive properties, while supporting environmentally friendly production, a circular bioeconomy, public health, food security, and preventive healthcare, creating meaningful societal, economic, and environmental impact.

Shaping the future of cybersecurity: The convergence of AI, quantum computing, and ethical frameworks for a secure digital era

(Impact Factor: 12.7)



ethical practices can strengthen the security of critical infrastructure, financial systems, healthcare, government services, and personal data while promoting privacy, fairness, digital innovation, and a safer, more secure digital future.

Psychological research on Alzheimer's disease in Pakistan: A systematic review of current trends and research gaps

(Impact Factor: 12.4)

The research, authored by Khawar, M., Khalid, S., Rehman, M. U., Usman, A., Al Malwi, W., & Asiri, F., with Sohail Khalid, Professor in the Department of Computer Science, School of Systems and Technology (SST), University of Management and Technology (UMT), Pakistan, and published in Computer Science Review, explores the convergence of artificial intelligence (AI), quantum computing, and ethical cybersecurity frameworks to create more resilient, intelligent, and trustworthy digital systems. The study highlights how AI-driven cyber defense, quantum-resistant cryptography, and responsible



This research, conducted by Aurooj, A., Emmanuel, S., Jabeen, M., Minhaj, D., Kirmani, S. K. N., Aurooj, T., & Kafeel, S. R., with **Dr. Syed Khawar Nadeem Kirmani**, Assistant Professor in the Department of Computer Science, School of Systems and Technology (SST), University of Management and Technology (UMT), Pakistan, and published in Ageing Research Reviews, systematically reviews psychological research on Alzheimer's disease in Pakistan, highlighting current knowledge, identifying research gaps, and guiding evidence-based improvements in dementia care. The study emphasizes the need for culturally appropriate assessment tools, early diagnosis strategies, caregiver support, greater investment in mental health services, interdisciplinary collaboration, public awareness, and stronger healthcare infrastructure to improve the quality of life for individuals with Alzheimer's disease and contribute to a healthier, more informed society.

AI and spectroscopy synergy: Revolutionizing fungal infection detection in fresh fruits for enhanced quality control
(Impact Factor: 12)

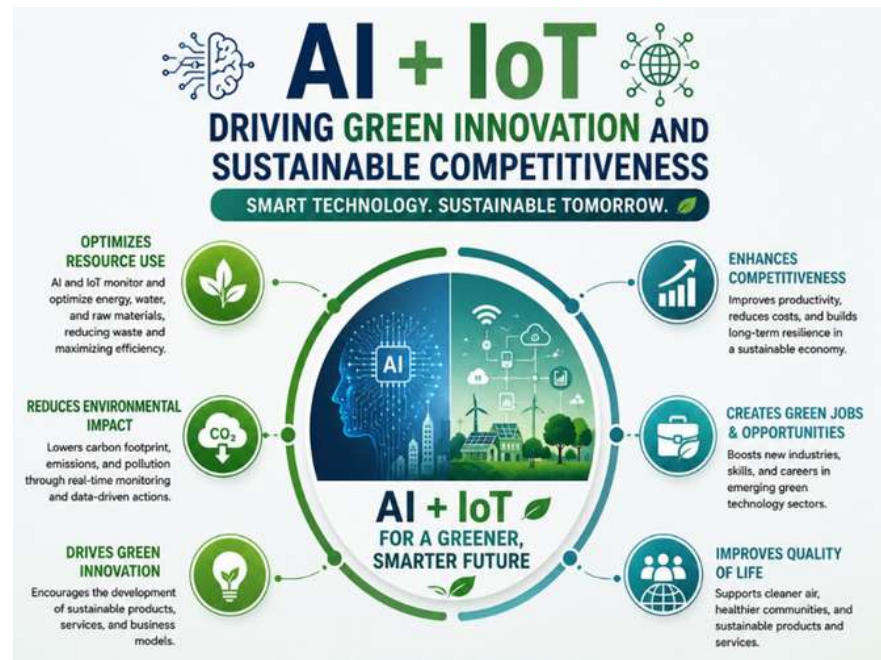


This research, authored by Mustafa, G., Yao, Z., Wang, L., Zhao, S., Wang, H., Quan, H., ... & He, K., including **Maratab Ali**, Assistant Professor in the School of Food and Agricultural Sciences, University of Management and Technology (UMT), and published in TrAC Trends in Analytical Chemistry, introduces the integration of artificial intelligence and spectroscopy for detecting fungal infections in fresh fruits. The study highlights its potential to improve food safety, reduce post-harvest losses, enhance agricultural quality control, and support food security through rapid, non-destructive detection of fungal

contamination, while helping farmers improve product quality, reduce waste and reliance on manual inspection, strengthen market competitiveness, and promote safer, more sustainable agricultural practices.

*Digital Technologies and Sustainable Competitiveness:
The Role of AI and Internet of Things in Driving Green
Innovation and Firm Performance*

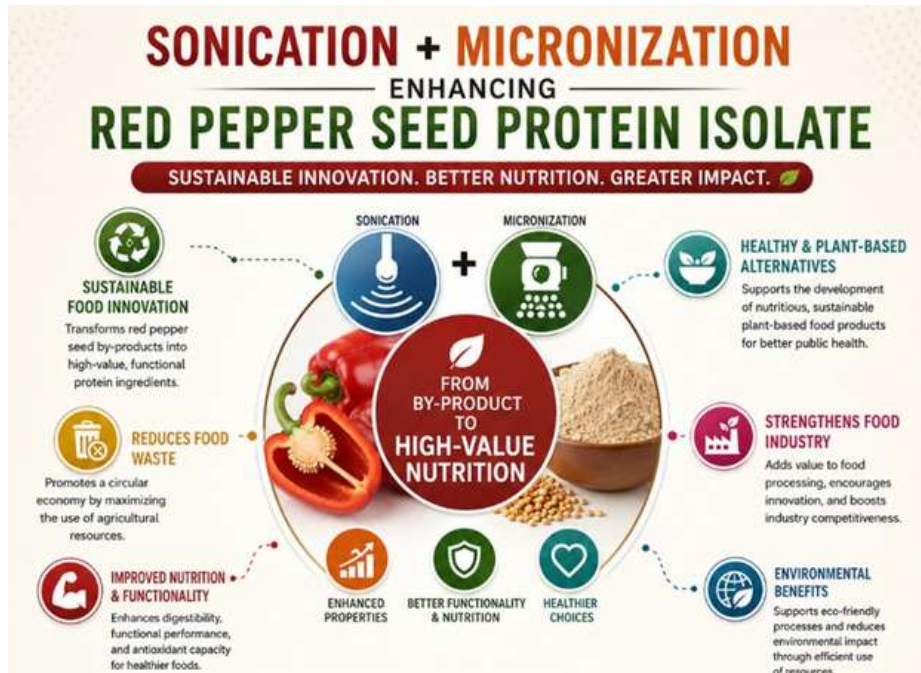
(Impact Factor: 10.1)



This research, conducted by Liu, B., with Muhammad Adil from the Department of Economics and Quantitative Methods at the Dr. Hasan Murad School of Management, University of Management and Technology (UMT), and published in Corporate Social Responsibility and Environmental Management, explores the integration of artificial intelligence (AI) and the Internet of Things (IoT) to drive green innovation and sustainable competitiveness. The study highlights how AI and IoT can optimize energy consumption, reduce waste, improve environmental performance, and support sustainable resource management, fostering cleaner environments, greener industries, job creation, and long-term economic competitiveness while advancing global sustainability goals and the transition toward a resilient, low-carbon economy.

Sonication integrated with micronization: structural modification to improve the in-vitro digestibility, functional, and antioxidant properties of red pepper seed protein isolate

(Impact Factor: 9.7)



improving protein digestibility, functional performance, and antioxidant capacity, while transforming agricultural by-products into high-value functional ingredients, reducing food waste, supporting a circular economy, strengthening food security, and advancing environmentally friendly food manufacturing for better public health and sustainability.

Energy-Efficient Optimization-Based and Low-Complexity Learning-Oriented Hybrid Broadband Millimeter-Wave Precoding Designs for Maximizing Spectral Efficiency in Multirelay MIMO-OFDM Networks
(Impact Factor: 8.9)

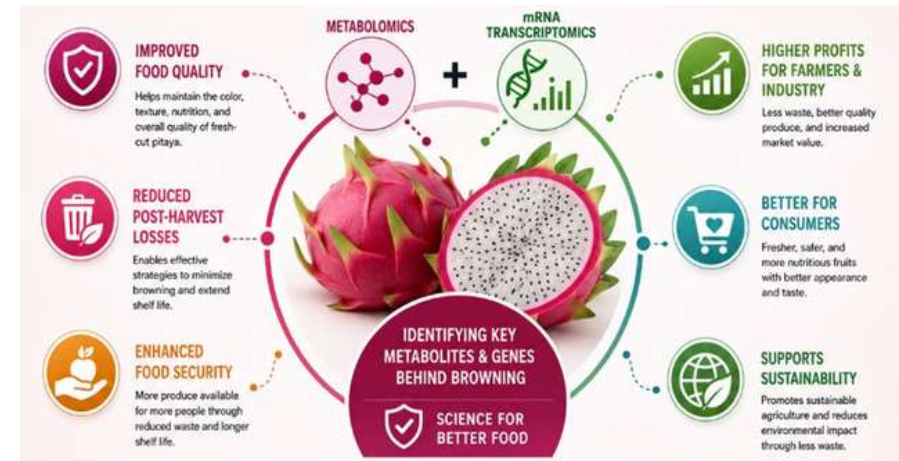
This research, contributed by Manzoor, M. F., Waseem, M., Diana, T., Walayat, N., Abduvalievna, T. Z., Aadil, R. M., ... & Aït-Kaddour, A., including Maratab Ali, Assistant Professor in the School of Food and Agricultural Sciences, University of Management and Technology (UMT), and published in Ultrasonics Sonochemistry, explores the synergy of sonication and micronization to enhance the properties of red pepper seed protein isolate. The study highlights its potential to promote sustainable food innovation by



This research, conducted by Mustafa, H. M. T., Baik, J. I., Moon, Y. K., Song, H. K., and Muhammad Adnan, Assistant Professor in the Department of Computer Science, School of Systems and Technology (SST), University of Management and Technology (UMT), Pakistan, and published in the IEEE Internet of Things Journal, introduces energy-efficient, low-complexity hybrid broadband millimeter-wave precoding for multirelay MIMO-OFDM networks. The study highlights its potential to enable faster, more reliable, and energy-efficient wireless communication for future 5G and 6G networks, supporting high-speed connectivity, smart cities, autonomous transportation, telemedicine, remote education, and large-scale IoT applications while reducing energy consumption, improving digital inclusion, strengthening communication infrastructure, and advancing sustainable digital transformation and economic growth.

Integrated metabolomic and mRNA transcriptomic analyses reveal key metabolites and genes involved in browning of fresh-cut pitaya

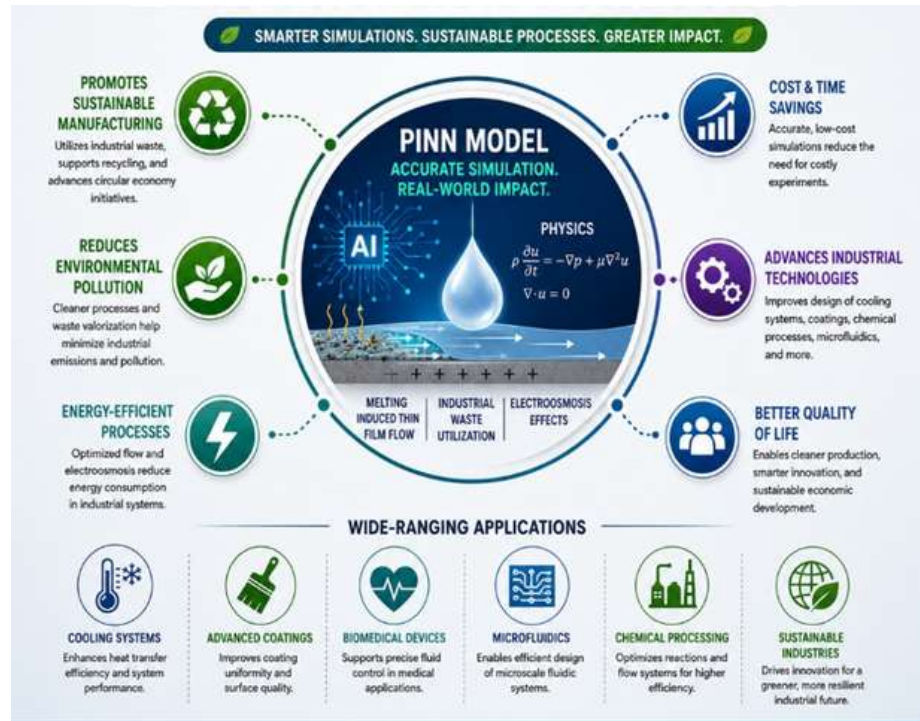
(Impact Factor: 8.5)



This research, contributed by Wang, Y., Ali, M., Teng, F., Shi, C., Zhang, X., Li, F., ... & Li, X., with Maratab Ali, Assistant Professor in the School of Food and Agricultural Sciences, University of Management and Technology (UMT), and published in the International Journal of Biological Macromolecules, employs metabolomic and mRNA transcriptomic analyses to identify the key metabolites and genes involved in the browning of fresh-cut pitaya (dragon fruit). The study highlights its potential to improve food quality, reduce post-harvest losses, enhance food security, and support sustainable agriculture by enabling effective preservation strategies that extend shelf life, minimize food waste, increase profitability for farmers and the food industry, and deliver fresher, safer, and more nutritious produce to consumers.

Heuristic physics-informed neural network model for simulating melting-induced thin film flow of cross-fluid with industrial waste and electroosmosis effects

(Impact Factor: 8)

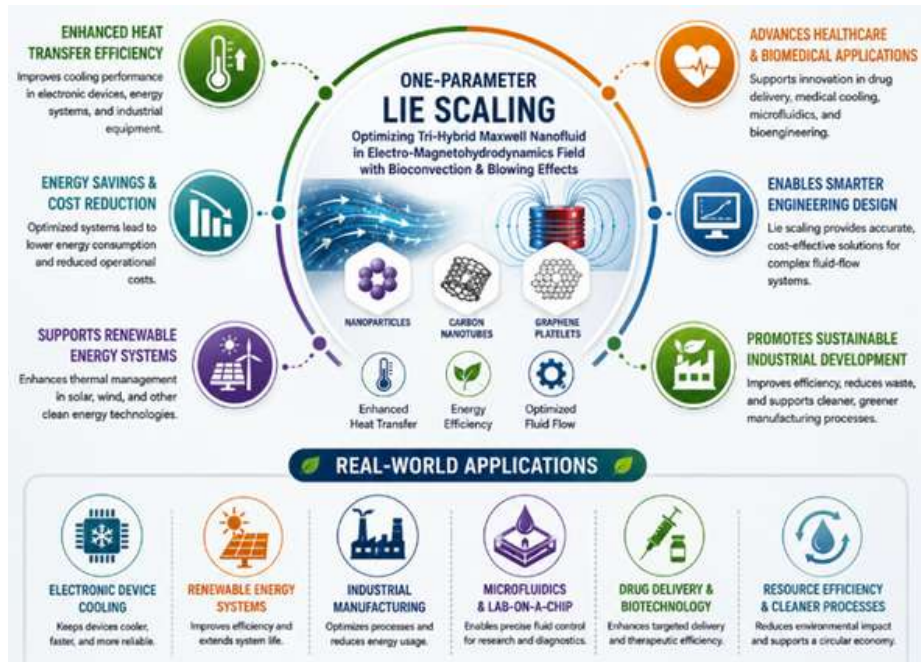


Management and Technology (UMT), and published in Engineering Applications of Artificial Intelligence, presents a heuristic physics-informed neural network (PINN) model for simulating melting-induced thin film flow of Cross-fluid with industrial waste and electroosmosis effects. The study highlights its potential to advance sustainable manufacturing, environmental protection, and energy-efficient industrial processes by enabling accurate AI-driven simulations, promoting industrial waste utilization and circular economy practices, improving technologies in cooling systems, coatings, biomedical devices, microfluidics, and chemical processing, and supporting cleaner production, lower energy consumption, and sustainable industrial innovation.

One-parameter lie scaling for tri-hybrid maxwell nanofluid in electro-magnetohydrodynamics field with bio-convection and blowing effects

(Impact Factor: 6.8)

This research, authored by Din, I. S. U., Siddique, I., Aslam, M. N., Zahid, Z., Franco, A. T., Nadeem, M., & Kraiem, H., including Imran Siddique, Professor in the Department of Mathematics, University of



This research, contributed by Saleem, M., Siddique, I., Shakoor, B., Radwan, T., & Abduvalieva, D., including Musharafa Saleem, Assistant Professor in the Department of Mathematics, Sialkot Campus, University of Management and Technology (UMT), and published in the Alexandria Engineering Journal, investigates one-parameter Lie scaling for tri-hybrid Maxwell nanofluid in an electro-magnetohydrodynamics field with bioconvection and blowing effects. The study highlights its potential to advance efficient heat transfer and fluid flow systems

for engineering and healthcare applications, enhancing cooling technologies, renewable energy systems, industrial manufacturing, biomedical equipment, microfluidics, drug delivery, and bioengineering while promoting energy efficiency, sustainable industrial development, cleaner technologies, and resource-efficient engineering.

Application of Non-Destructive Detection Techniques in Grain and Oil Quality: A Review (Impact Factor: 6.8)



This research, authored by Ahmed, Z., Xu, B., Liu, S., Waseem, M., Tufail, T., Ashraf, J., ... & Manzoor, M. F., with Zahoor Ahmed, Assistant Professor in the School of Food and Agricultural Sciences, University of Management and Technology (UMT), and published in Food Reviews International, reviews non-destructive detection techniques for grain and oil quality, highlighting their potential to promote safer food systems, reduce post-harvest losses, and improve agricultural sustainability. The study emphasizes how rapid, accurate, and real-time quality assessment can detect contamination, adulteration, moisture changes, and quality defects without damaging products, enhancing food safety, minimizing waste, supporting precision agriculture and sustainable resource management, strengthening food security, and building a more resilient agricultural and food production system.

Key Highlights of 2 Months:





UMT

Main Campus, UMT Road, C-II Johar Town, Lahore, Pakistan.