Guest Editors of
Structural Integrity and Life-Special Issue A 2025

Dr MANOJ SAHNI and Dr MAHENDRA KUMAR GOURISARIA

The first Special Issue (A) in 2025 of *Structural Integrity and Life* once again invites Prof. Dr Manoj Sahni from the Department of Mathematics, School of Technology, Pandit Deendayal Energy University, Gandhinagar, Gujarat, India, and Dr Mahendra Kumar Gourisaria from the KIIT Deemed to be University, Bhubaneswar, Odisha, India.

Brief about Guest Editors:

Dr Manoj Sahni epitomizes dedication and expertise as a distinguished mathematics educator and researcher, boasting over 20 years of invaluable contributions to the realms of teaching and scholarly inquiry. Currently, he holds the esteemed position of Professor within the Department of Mathematics at the prestigious School of Technology, Pandit Deendayal Energy University, situated in Gandhinagar, Gujarat, India.

His illustrious career trajectory includes a notable tenure as Head of Department from the years 2020 to 2022. Dr Sahni's scholarly endeavours extend far beyond the confines of academia, evidenced by his prolific publication record comprising over 100 research papers in peer-reviewed journals such as SCI, SCIE, ESCI, and Scopus-indexed Conference Proceedings, along with authored chapters in esteemed publications by renowned publishers as Springer, Taylor & Francis, and Elsevier.

Furthermore, his commitment to academic excellence is reflected in his multifaceted role as an esteemed Advisory Board member, Technical Committee member, and diligent reviewer for numerous international journals and conferences of high repute.

Dr Sahni's leadership extends to the orchestration of esteemed international conferences, notably serving as the organiser of the 1st, 2nd, 3rd and 4th International Conferences on Mathematical Modelling, Computational Intelligence Techniques, and Renewable Energy (MMCITRE).

Dr Sahni's global footprint is further underscored by his active involvement in scientific committees of international conferences and associations, coupled with his notable engagements as a sought-after speaker, delivering expert talks at both national and international platforms.

In addition to his scholarly pursuits, Dr Sahni is an esteemed member of several esteemed international professional societies, including the American Mathematical Society (AMS), Society for Industrial and Applied Mathematics (SIAM), IEEE, Mathematical Association of America (MAA), Forum for Interdisciplinary Mathematics (FIM), Indian Mathematical Society (IMS), IAENG, among others.

His exemplary contributions to research have garnered widespread acclaim, earning him two prestigious awards in recognition of his outstanding research endeavours benefiting society at large.

Dr Mahendra Kumar Gourisaria received his master's degree in computer application from Indira Gandhi National Open University, New Delhi, and the M. Tech. in Computer Science and Engineering from Biju Patnaik University of Technology, Rourkela. He has completed his Ph.D. from KIIT Deemed to be University, Bhubaneswar, Odisha. Presently he is working as Assistant Professor with the School of Computer Engineering, KIIT Deemed to be University, Bhubaneswar, Odisha. He has an experience of more than 22 years in academia and nine years in research. He has guided more than 120 B.Tech. students in their project work and seven M.Tech. theses. He has published more than 125 research papers in different book chapters, international journals, and conferences of repute. His google scholar citation is more than 1700 with an h-index of 21 and i10- index of 48. He has also served as an organising committee member for various conferences and workshops. He chaired session in many international conferences and acted as a reviewer in many reputed journals of Springer, Hindawi, etc., and many reputed conferences. He is a member of IEEE, IAENG and UACEE, and a Life Member of ISTE, CSI, and ISCA.

Introduction to the Special Issue A 2025:

This Special Issue on Structural Integrity and Life focuses on advancements in the understanding of material durability, failure mechanisms, and structural health monitoring. It brings together research on fatigue, fracture mechanics, corrosion, and other degradation processes affecting the long-term performance of materials and structures. The issue aims to address innovative approaches in testing, modelling, and assessing structural integrity to enhance the safety and longevity of engineering systems in industries.

This issue comprises twelve research papers covering a diverse range of applications, including the analysis of functionally graded materials (FGMs), wave propagation in graded structures, and the behaviour of materials at the nanoscale. The studies explore topics such as the mechanical, thermal, and dynamic performance of FGMs, as well as the influence of nanoparticles on material properties and performance. Together, these papers offer valuable insights into advanced material design and applications in fields like aerospace, electronics, and nanotechnology.

This issue also addresses a variety of advanced topics in heat transfer and structural analysis. Key studies include the investigation of heat transfer in engine oil to enhance lubrication performance, and the application of auxetic core airfoils for improved aerodynamic efficiency. Research on thick-walled spherical shells and pressurized rotating cylinders examines stress distribution and thermal behaviour under extreme conditions. Additionally, fracture analysis in hemispherical dental implant crowns explores the mechanical reliability and failure mechanisms, contributing to advancements in dental material design for long-term durability.

This issue contains 12 peer-reviewed carefully selected articles based on the study of various materials, their computational analysis based on strength and failure under different physical conditions, different mathematical tools used under different circumstances, methods of minimization of the risk of failure and also the cost of manufacturing of any structure, their mathematical modelling and many more. In this way this issue is not only useful for researchers, educationalists, eminent scientists and students but also very much useful for engineers, industrialists working on manufacturing of materials, used in making residential buildings, in household products, in making various equipment used in various fields.

The objective of this special issue is to disseminate the knowledge about the recent development of mathematical modelling among researchers, educationalists, renowned scientists and students, to enable them to learn all the newest technology available in the scientific and technological domains. All academics, engineers and scientific researchers looking for new tools would surely benefit from these articles.