

Sensors and Materials

Call for Papers

Special Issue: “Intelligent Sensing and AI-driven Optimization for Sustainable Smart Manufacturing”

The contemporary global landscape is defined by an unprecedented commitment to environmental stewardship. As the collective awareness regarding energy conservation and carbon footprint reduction intensifies, nations worldwide are pivoting toward aggressive "Net-Zero" policies. This shift is not merely conceptual; it has manifested in robust, sector-specific action plans designed to honor carbon reduction commitments across the energy, industrial, and manufacturing landscapes. According to the International Energy Agency (IEA), the window for achieving carbon neutrality by 2050 is rapidly narrowing. To meet this ambitious target, it is imperative that the industrial sector takes immediate and decisive action, specifically by maximizing energy efficiency and curtailing the consumption of industrial resources.

Parallel to these environmental mandates, the advent of Industry 4.0 has fundamentally redefined the manufacturing floor. What was once viewed as a distant, futuristic vision has crystallized into a tangible, current reality. Smart manufacturing has moved beyond being an unattainable concept to become a foundational element of every progressive enterprise. In this new era, sophisticated applications and software platforms are the primary engines driving the modernization of manufacturing, aligning industrial growth with critical environmental, social, and governance (ESG) objectives. By seamlessly integrating advanced information technology and artificial intelligence (AI) with traditional production methodologies, manufacturers can now achieve unprecedented levels of operational flexibility, cost-effectiveness, and hyper-personalized production.

This transformative journey provides a comprehensive suite of solutions that span the entire value chain—from high-precision automation on the production line to the holistic optimization of global supply chains. The ultimate goal is the intelligent metamorphosis of the entire factory ecosystem, facilitating a seamless transition to low-carbon operations. For any manufacturing enterprise seeking to maintain a competitive edge in today's volatile market, a deep understanding of emerging smart trends and the role of intelligent software is no longer optional—it is crucial. Survival and growth in this industrial revolution demand a culture of relentless innovation and rapid adaptation.

The academic community has responded to this challenge with significant vigor. Researchers are now dedicating extensive efforts to the development of novel AI methodologies, energy-saving

architectures, and robust decarbonization strategies. These scientific breakthroughs are directly influencing the global roadmap toward carbon neutrality. We are witnessing the birth of a new paradigm in "Smart Science," where AI-driven predictions—covering production systems, intelligent sensing, and smart materials—are transcending traditional engineering boundaries.

This Special Issue is dedicated to exploring the mathematical and physical foundations of AI system analysis and optimization within the realms of physics and engineering. We are interested in the diverse application of these theories to real-world industrial challenges. We cordially invite prospective authors to contribute original, high-quality research papers that push the boundaries of what is possible in energy-saving manufacturing systems.

Indicative Topics/Areas

The topics of interest include, but are not limited to

- AI-driven Energy-saving Systems: Predictive modeling and optimization for industrial efficiency.
- Intelligent Sensor Networks & IoT: Applications for carbon emission monitoring and energy management.
- Advanced Sensing & Control Systems: Innovations in machine vision, localization (e.g., AMR), and real-time process control.
- Smart Materials & Manufacturing Processes: Development of sustainable materials and predictive models (e.g., FEA/CMP).
- Decarbonization Strategies: AI paradigms for reducing energy consumption and the carbon footprint in manufacturing.
- Other Sensing Methods and Applications

Schedule

Submission Deadline	August 31, 2026
Acceptance Notice	September 30, 2026
Final Manuscript	October 31, 2026
Publication Date (Planned)	November 30, 2026

All accepted papers will be selected from among the excellent papers presented at the 2026 ISME International Conference of Mechanical and Electrical Engineering. Prospective contributors are invited to submit their papers to Prof. Wang via email at wcc@mail.nsysu.edu.tw

Lead Guest Editor:

Prof. Cheng-Chi Wang (Ph.D.), Department of Mechanical and Electro-Mechanical Engineering (professor), National Sun Yat-sen University, No. 70 Lien-hai Road, Kaohsiung, Taiwan. Email: wcc@mail.nsysu.edu.tw
wccpipn@gmail.com

(Attention)

As stated in Instructions to Authors in the Guidelines, the author(s) will be obliged to pay the publication fee upon the acceptance of the manuscript for publication (for example, JPY 178200 for 10 pages in *Sensors and Materials* format). If the quality of the English of your manuscript does not satisfy the journal standards, the authors should bear the proofreading fee (JPY 10000–40000), which will be charged with the publication fee. If you have any questions, please feel free to contact the editorial staff at the address below.

Editorial Department of *Sensors and Materials*

MYU K.K.

1-23-3-303 Sendagi, Bunkyo-ku, Tokyo 113-0022, Japan

Tel: +81-3-3827-8549, Fax: +81-3-3827-8547

E-mail: myukk@myu-inc.jp

