

Sensors and Materials

Special Issue Call for Papers

Special Issue: “Intelligent Sensing Methods and Smart Materials for Low Carbon Emission and Energy-saving Techniques”

Call for Papers

It is considered that humankind is lucky that, at this point, global warming is only in its transition since our planet has not yet experienced the 2.0 °C increase from the 1850–1900 average. Unfortunately, the luck is not so great considering the trajectory of the CO₂ emission is heading in toward a 1.5 °C increase in the coming decade. It is, after all, the day after tomorrow. Additionally, the current status of the global temperature is between 1.1 °C and 1.7 °C higher than the in the years 1850–1900. The general goal is to keep the temperature rise below 2 °C in order to avoid catastrophic irreversible outcomes. Meanwhile, the United Nations Climate Summit (COP 21) completed the "Paris Climate Agreement". Hundreds of countries have agreed to strive for carbon neutrality by 2050. The most important thing about the Paris climate agreement is that countries that have agreed to it have pushed forward domestic legislation to enforce the net zero goal to ensure that the common goal of humankind can be achieved. Therefore, most countries now aim to achieve net zero or carbon neutrality by 2030.

Energy consumption is fairly distributed among transportation, industrial, and other sectors. Whereas the transportation sector consumes 30% of the total international energy, the manufacturing industries are accountable for one-third of the global energy consumption. Needless to say, this energy is mostly supplied by fossil fuels that generate carbon dioxide, which translates to 36% of net global carbon emissions being produced by the manufacturing industries. Moreover, the problem is dynamic. Energy consumption is escalating with time. The need for products is propagating owing to the increasing population, which has led to approximately doubling the need for energy in the past 30 years.

Low-carbon (energy-saving) technologies mainly include carbon reduction technologies, carbon-free technologies, and decarbonization technologies. By controlling carbon emissions, low-carbon technologies with sensing schemes reduce the concentration of greenhouse gases in the atmosphere to a relatively stable level, which is conducive to slowing or eliminating the impact of global climate change, maintaining the balance of the ecosystem, maintaining coordinated development with the natural environment, and promoting economic development.

Many researchers have made great efforts to develop low carbon emission methodologies and their research results have greatly influenced the establishment of the goal of carbon neutrality by 2050.

Driven by such motivation, innovative low-carbon and energy-saving sensing manufacturing processes, including the smart producing system, intelligent sensing control, smart materials application, and decarbonization analysis are being proposed not only in engineering but also in new paradigms in smart science. This special issue encompasses the mathematical and physical theories of smart system analysis and optimization in physics and engineering and their various applications. Prospective authors are invited to submit original papers to this Special issue.

Indicative Topics/Areas

The topics of interest include, but are not limited to

- Intelligent Sensing Methods for Low Carbon Emission and Energy-saving Systems
- Sensor Networks of IoT Application for Carbon Emission and Energy
- Sensor Designs for Detecting the Carbon Footprint
- Smart Sensing Control Systems
- New Materials for Reduction of Carbon Emission
- Sustainable Materials Development
- Inventions/Innovative Methods for Reduction of Energy Consumption and Carbon Emission
- Optimization Schemes
- Other Low Carbon/Energy-saving Systems, Sensing Methods, and Applications

Prospective contributors are invited to submit their paper to Prof. Wang by email to wcc@ncut.edu.tw.

Schedule

Submission Deadline	September 30, 2023
Acceptance Notice	October 31, 2023
Final Manuscript	November 30, 2023
Publication Date (Planned)	December 31, 2023

Lead Guest Editor:

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(Attention)

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