

# ENERGY NEWSLETTER

## Past 2023 Energy Conferences



### FFHMT & EHST 2023

10th International Conference of Fluid Flow, Heat and Mass Transfer

7th International Conference on Energy Harvesting, Storage, and Transfer



June 7-9, 2023

Ottawa - Canada



### MHMT 2023

8th World Congress on Momentum, Heat and Mass Transfer



March 26 - 28, 2023

Lisbon, Portugal

## Advances in materials science offer a future of clean energy



Researchers at Wuhan University of Technology's School of Materials Science and Engineering (MSE) are making significant breakthroughs in materials technology for clean energy production and storage. Their focus areas include improving photovoltaic (PV) solar cells and energy storage technologies. The MSE team has developed a new process for perovskite-based PV cells, achieving close to 20% efficiency and enhanced stability.

They have also created the Mai-Yan model, enabling efficient energy storage in microchips. Additionally, their work on thermoelectric materials has led to significant improvements in small-scale power generation devices. By controlling the transport of electrons and vibrations through nanostructures, they have enhanced thermoelectric performance. These advancements in materials science have the potential to revolutionize clean energy production and storage. The MSE's research aims to make PV cells more efficient and stable, develop energy storage technologies for miniaturized devices, and improve thermoelectric materials for power generation. Their work contributes to a greener and more sustainable future.

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## Energy budget diagnosis of changing climate feedback

The study examines the changing climate feedback over the past 50 years, revealing a significant decrease in climate sensitivity. By analyzing historical records, researchers find a  $0.8 \pm 0.5 \text{ W m}^{-2} \text{ K}^{-1}$  reduction in climate feedback. The concentration of warming in the western tropical Pacific is highlighted, where negative nonlocal radiative feedbacks play a role. These findings challenge prevailing assumptions in climate models and have implications for achieving warming thresholds outlined in international agreements. Understanding the pattern effect and evolving climate feedback is crucial for accurate climate projections and informed decision-making in addressing climate change challenges.



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## Past Conference Gallery



## Collaborations drive energy storage research

Dr. Y. Shirley Meng, a battery expert from the University of Chicago, stresses the significance of collaboration in advancing energy storage research. She emphasizes the need to optimize multiple components of battery systems and advocates for a digital platform to design and monitor batteries at various levels. Dr. Meng believes computational scientists can contribute to electrolyte design and discovering new materials, but collaboration with experimentalists is crucial.



She highlights challenges in data sharing between industry and academia, emphasizing the importance of open-source approaches. To achieve affordable and sustainable energy, Dr. Meng suggests a change in societal mindset and increased investment. She mentions challenges in integrating renewable energy into the grid and the need for improved battery management algorithms. Dr. Meng concludes by emphasizing the importance of continuous improvement in current technologies and exploring new possibilities for energy storage.

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## UPCOMING CONFERENCES

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**MHMT**  
CONGRESS

**9th World Congress on Momentum, Heat and Mass Transfer**  
April 11 - 13, 2024. Imperial College, London, United Kingdom

**FFHMT**  
2024

**11th International Conference of Fluid Flow, Heat and Mass Transfer**  
June 16 - 18, 2023. University of Toronto, Toronto, Canada

**EHST**  
2024

**8th International Conference on Energy Harvesting, Storage, & Transfer**  
June 16 - 18, 2023. University of Toronto, Toronto, Canada

**HTFF**  
2024

**11th International Conference on Heat Transfer and Fluid Flow**  
August 22 - 24, 2023. Barcelona, Spain

**IC<sup>24</sup>**  
**ERT**

**8th International Conference on Energy Research and Technology**  
August 25 - 27, 2023. Barcelona, Spain

**ICFFTS**  
2024

**5th International Conference on Fluid Flow and Thermal Science**  
November 21- 23, 2024. Lisbon, Portugal

**ICAERA**  
2024

**5th International Conference on Advances in Energy Research and Applications**  
November 21- 23, 2024. Lisbon, Portugal



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