



## Heat and Cold Storage for a Net-Zero Future

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### Message from the Guest Editors

Dear Colleagues,

In a net-zero future, most energy should be supplied by renewable energies such as solar and wind energy to reduce the emission of greenhouse gases and related climate problems. However, these sources are strongly volatile and intermittent. Thus, energy storage is required in the future energy system to bridge the gap between energy supply and energy demand. Thermal energy storage (TES, i.e., heat and cold storage) stores thermal energy in materials via temperature change (e.g., molten salt), phase change (e.g., water/ice slurry), or reversible reactions (e.g.,  $\text{CaCO}_3/\text{CaO}$ ). TES technologies have the advantages of a more flexible location and lower investment compared to pumped hydrostorage, lower storage cost, larger storage capacity (GWhel scale), higher safety, and more environmental friendliness than batteries due to the simple, affordable materials used. TES technologies have been widely applied in the field of energies, e.g., power generation, grid storage for stabilization, and heat and cold energy management.





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## Message from the Editor-in-Chief

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