

# **The Role of Heat Transfer and Fluid Flow in Thermal Energy Storage for Heating, Cooling and Mobility Decarbonisation**

**Dr. Yulong Ding**

University of Birmingham, UK

## **Abstract**

Heating, cooling and mobility are among the biggest challenges in energy system decarbonisation by middle of this century to achieve Net-Zero. Thermal energy storage (TES) has a pivotal role to play in such net-zero energy systems. TES consists broadly of three categories of sensible, latent, and thermochemical storage technologies. This talk will cover the latent and thermochemical based TES using respectively composite phase change materials (cPCMs) and composite thermochemical materials (cTCMs). Scientific and technological challenges in cPCM & cTCM based technologies will be highlighted. Solutions towards these challenges require fundamental understanding of the underlying physics particularly flow and heat transfer of multiphase systema across a very large spatial length scale from atomic/molecular level to system level.