



TNCHE Asia 2023 Conference
" Decarbonization of Process Industry and
Next-Generation Materials for Sustainability "
Presenter Bio Data & Abstract



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Title of Presentation : Carbon Materials for Energy Storage Technologies

Presentation Abstract :

Energy storage technologies have become increasingly important owing to the rapidly increasing adoption of electric vehicles (EVs) and energy stationary storage (ESS) worldwide. Carbon materials, such as graphite, activated carbon, carbon black, graphene, and carbon nanotubes, are widely used in energy storage technologies such as supercapacitors and lithium-ion batteries due to their high surface area, good electrical conductivity, and stability. Activated carbon is commonly used for supercapacitors since it has a high surface area, allowing it to store large amounts of electrical charge. Additionally, it is a low-cost and readily available material, which makes it a popular choice for supercapacitor applications. However, activated carbon has lower electrical conductivity compared to other advanced carbon materials such as curved graphene, which limits its performance in high-performance supercapacitors. Additionally, the surface area of activated carbon can also be affected by impurities, which can reduce its performance over time. Nevertheless, activated carbon is still widely used in supercapacitors for its high energy density, low cost, and ease of production. On the other hand, both natural and artificial graphite materials are widely used for the anode of Li-ion batteries (LIBs). Besides, carbon black and carbon nanotubes (CNTs) can be used as conductive additives for both supercapacitors and LIBs. The important roles and required properties of those carbon materials for energy storage technologies will be highlighted in this talk.

Keywords: Energy storage, Batteries, Supercapacitors, Carbon nanotubes, Graphene, Carbon black, Graphite, Activated carbon