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Research field
Physical chemistry

PhD title
Synthesis, characterization, and electrochemical performance study of heterostructure MoS_2-based nanocomposite as high-performance supercapacitor electrodes

Summary

The population growth and the Industrial Revolution rapidly increased global energy demand and production. Researchers are committed to identifying alternative renewable energy sources and advanced energy storage solutions, aiming to reduce dependence on fossil fuels for energy supply. This project focuses on synthesizing MoS_2-based heterostructure ternary composites electrodes. While pristine 2D MoS_2 materials serve as electrode materials for energy storage, they have inherent issues with structure and interface, leading to moderate performance. To improve the electrochemical properties of MoS_2, one promising strategy is to build heterostructure ternary nanocomposites by integrating additional electroactive elements. This project includes the synthesis, characterization, and electrochemical studies of these nanocomposite materials. Optimizing these materials will improve capacitance, and stability contributing to efficient and sustainable energy storage solutions.

Keywords
- Supercapacitors
- Energy storage
- Molybdenum Disulfide (MoS_2)
- Renewable energy
- Nanocomposites

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