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Type: Poster Presentation

Topic: Computational analyses of graphene quantum dots as anode material for lithium-ion batteries.

Many renewable energy technologies are underperforming due to optimal energy collection and storage. Renewable energy generation is not available all the time, it happens when the wind blows or the sun shines, storage is an essential part. Lithium-ion (LI) batteries are dominating the market as storage devices with recent advances towards the electric vehicles and renewable energy storage. Exploiting high capacity anode materials is one of the most effective ways to construct high energy density LI batteries. Energy, power, charge-discharge rate, cost, cycle life, safety and environmental impact are some of the parameters that need to be considered in adopting optimal LI batteries. As the recent development of batteries is mostly towards solid state batteries, small and high energy density materials are required. Graphene quantum dots (GQDs) have broad prospects in energy storage and conversion. First principle calculations are used to analyze optical properties of GQDs. The UV-vis spectra shows the maximum absorption peak at 750 nm within the edge of the visible region of the solar spectrum, thus favorable for renewable energy storage. Computational analyses strongly suggest the future development trend of GQDs research and its opportunities in energy storage devices.

Apply to be considered for a student ; award (Yes / No)?

yes

Level for award;(Hons, MSc, PhD, N/A)?

PhD

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