Xiao feng talks about energy storage

Are bulk COFs good for energy storage & conversion?
Therefore,they have shown great potentialin electrochemical energy storage (EES) and conversion (EEC). However,in bulk COFs,the defects always impede charge carrier conduction,and the difficulties in reaching deep-buried active sites by either electrons or ions lead to limited performance.

Who supports YG's research on energy storage?
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Can redox-active conductive MOFs be used in energy-storage applications?
Furthermore,the HAB MOF electrodes exhibited highly reversible redox behaviours and good cycling stability with a capacitance retention of 90% after 12,000 cycles. These promising results demonstrate the potentialof using redox-active conductive MOFs in energy-storage applications.

Can a temperature swing gas exfoliation transform bulk COFs to NSS?
A temperature-swing gas exfoliation approach also transforms bulk COFs to NSs in liquid. 142 Three azine-/imine-linked 2D COFs,NUS 30-32,were exfoliated by using this method. First,the bulk powder was heated to 300 °C for 10 min in air,and then immersed into liquid N 2 quickly (Fig. 9e).

Can nanomaterials improve the performance of energy storage devices?
The development of nanomaterials and their related processing into electrodes and devices can improve the performanceand/or development of the existing energy storage systems. We provide a perspective on recent progress in the application of nanomaterials in energy storage devices,such as supercapacitors and batteries.

Is a Ni 3 conductive MOF suitable for double-layer capacitive energy storage?
Recently,an intrinsically conductive MOF demonstrated a stable electrochemical performance 13. The Ni 3 (HITP) 2 MOF was found to have large pore sizes and a high SSA and was therefore an excellent candidatefor double-layer capacitive energy storage.

Rechargeable aqueous zinc-ion batteries (AZIBs) have captured a surge of interest in recent years as a promising alternative for scalable energy storage applications owing to the intrinsic safety, affordability, environmental benignity, and impressive electrochemical performance. Despite the facilit ...

The oxygen reduction reaction (ORR, O 2 + 4H + + 4e - -> 2H 2 O), as a rate-determining step (RDS), plays a vital role in energy storage and conversion devices, including ...

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Compared with electrochemical energy storage techniques, electrostatic energy storage based on dielectric capacitors is an optimal enabler of fast charging-and-discharging speed (at the microsecond level) and ultrahigh power density (1-3).Dielectric capacitors are thus playing an ever-increasing role in electronic devices and electrical power systems.

[88] Xiao M, Feng B, Gong K. Preparation and performance of shape stabilized phase change thermal storage materials with high thermal conductivity. Energ Convers Manage 2002; 43: 103-108. [89] Mochane M.J, Luyt A.S. Synergistic effect of expanded graphite, diammonium phosphate and Cloisite 15A on flame retardant properties of EVA and EVA/wax ...

The ever-increasing market demand for grid-scale energy storage systems (EESs) urgently needs to develop state-of-the-art energy storage technologies with high conversion efficiency and cost-effectiveness. 1-4 Sodium-ion batteries (SIBs), with remarkable merits in rich abundance and worldwide distribution of sodium resources, resultant low cost ...

A promising energy storage system: rechargeable Ni-Zn battery. / Lai, Shi-Bin; Jamesh, Mohammed-Ibrahim; Wu, Xiao-Chao et al. In: Rare Metals, Vol. 36, No. 5, 01.05.2017, p. 381-396. Research output: Journal Publications and Reviews > RGC 62 - Review of books or of software (or similar publications/items) > peer-review

Zn-based electrochemistry is considered to be the most promising alternative to Li-ion batteries due to its abundant reserves and cost-effectiveness. In addition, aqueous electrolytes are more convenient to be used in Zn-based batteries due to their good compatibility with Zn-chemistry, thereby reducing cost and improving safety. Furthermore, Zn2+/Zn couples ...

Dr. Xiao got his Ph.D degree from Tokyo Institute of Technology (Tokyo Tech) in 1996. After three years in RIKEN as a special post-doctorate researcher, he joined Tokyo Tech as an associate professor in1999 at the department of energy sciences, and ...

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Liquid air energy storage (LAES) is a promising energy storage system with the main advantage of being geographically unconstrained. The efficiency of LAES could be improved by utilizing compression heat and integration with other systems. As an effective heat recovery process, the Stirling engine (SE) is introduced to the LAES system.

Besides the applications in gas storage and separation, catalysis, sensor, and drug delivery, MOFs are receiving increasing research interest in the field of electrochemical ...

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