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Back Cover

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CONTENTS

Research highlight

**Emerging high-power NIR-emitting phosphor-converted LEDs**

Review articles

Fabrication strategies of porous precious-metal-free bifunctional electrocatalysts for overall water splitting: Recent advances

This overview summarized recent advances in different methodologies for the preparation of porous materials for electrocatalytic overall water splitting, including thermal decomposition, electrochemical deposition, template-assisted strategy, hydrothermal strategy, wet chemical and other strategies.
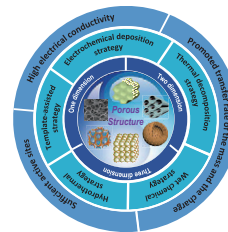
Sustainable biochar as an electrocatalysts for the oxygen reduction reaction in microbial fuel cells

Biochars are produced from neutral sources (i.e., agricultural wastes). The morphology and catalytic performance of biochar electrodes must be elucidated through measurements. Overall, biochars possess remarkable electrocatalytic properties for ORRs and are considered to be ORR electrocatalysts with developmental potential.
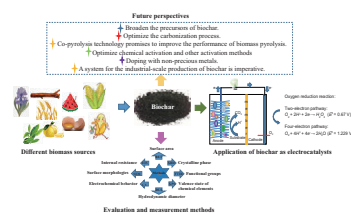
Research papers

Removal of V and Fe from spent denitrification catalyst by using oxalic acid: Study of dissolution kinetics and toxicity

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V and Fe from Spent SCR catalyst could be efficiently leaching by oxalic acid and the leaching behaviors were successfully predicted by Avrami kinetic model. Toxicity risk of V and Fe in spent SCR catalyst reduced significantly after recovery.
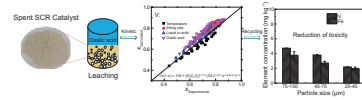

Salt effect on MUCT system performance of nitrogen and phosphorus removal

The effect of salinity on biological nitrogen and denitrifying phosphorus removal was investigated in a MUCT system. All the COD, NH_4^+-N, TN and TP removal rates exhibited a trend of decline with the salt concentration increasing, so increased salinity had a detrimental effect on PAOs, DPAOs, SND.
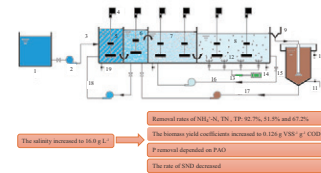

Hydrogen production via chemical looping reforming of coke oven gas

Chemical looping reforming of coke oven gas to produce pure H_2 is proposed in the present work by using $La_{1-x}Sr_xFeO_3$ perovskite oxides as oxygen carriers. The doping of suitable amounts of Sr in $LaFeO_3$ perovskite (e.g., $La_{0.5}Sr_{0.5}FeO_3$) significantly promotes the reactivity for selective oxidation of methane to syngas and inhibits the formation of carbon deposition.
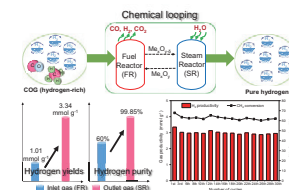
Assisting Bi_2MoO_6 microspheres with phenolic resin-based ACSs as attractive tailor-made supporter for highly-efficient photocatalytic CO_2 reduction

There exist effective synergistic effects between ACSs, with enhanced CO_2 absorption and admirable electrical conductivity, and Bi_2MoO_6, with suitable oxidation reduction potentials and bandgap, realizing that Bi_2MoO_6/ACSs displays as 1.8 times CO_2 reduction activity to CO as bulk Bi_2MoO_6 under simulated sunlight irradiation.
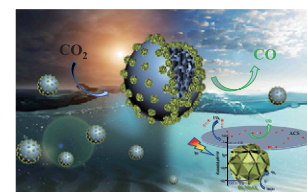

MOF-derived zinc manganese oxide nanosheets with valence-controllable composition for high-performance Li storage

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The porous ZMO nanosheets were obtained from 2D MOF precursors using PVP as a soft template. By analyzing ZMOs from different annealing temperature, we disclosed that the higher-valent Mn the ZMO contains, the more additional capacity it gains upon cycling.
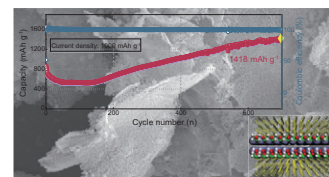
Visible-light-induced hydrogenation of biomass-based aldehydes by graphitic carbon nitride supported metal catalysts

The photocatalyst of Pd supported on graphitic carbon nitride (Pd/g-C_3N_4) exhibits excellent catalytic activity in photo-induced hydrogenation of biomass-based furfural and 5-hydroxymethylfurfural with environmental benign reagents of formic acid as proton source and triethylamine as sacrificial electron donator.
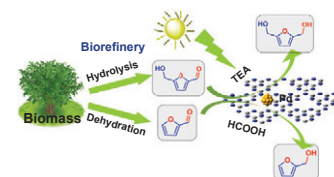
Effective regeneration of high-performance anode material recycled from the whole electrodes in spent lithium-ion batteries via a simplified approach

In this research, a simplified recycling process is explored to recycle all valuable components from electrodes in spent $LiCoO_2$-graphite battery and regenerate $CoO/CoFe_2O_4/EG$ as a high-performance anode material for LIBs.

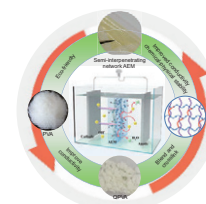**Facile γ-ray irradiation synthesis of Pt/GA nanocomposite for catalytic reduction of 4-nitrophenol**

The platinum/graphene aerogel (Pt/GA) nanocomposite was synthesized by a clean, green route. What's more, Pt/GAexhibited outstanding catalytic activity for the reduction of 4-nitrophenol.
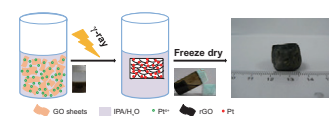
Semi-interpenetrating network anion exchange membranes based on quaternized polyvinyl alcohol/poly(diallyldimethylammonium chloride)
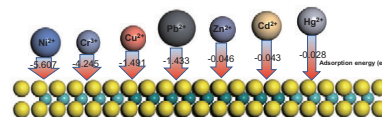
Quaternized PVA and PDDA are introduced to improve the conductivity, the ring structure of PDDA also improves alkaline stability of AEMs. The semi-interpenetrating network AEMs with microporous structure exhibit good ionic conductivity, mechanical strength and alkaline durability.

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