



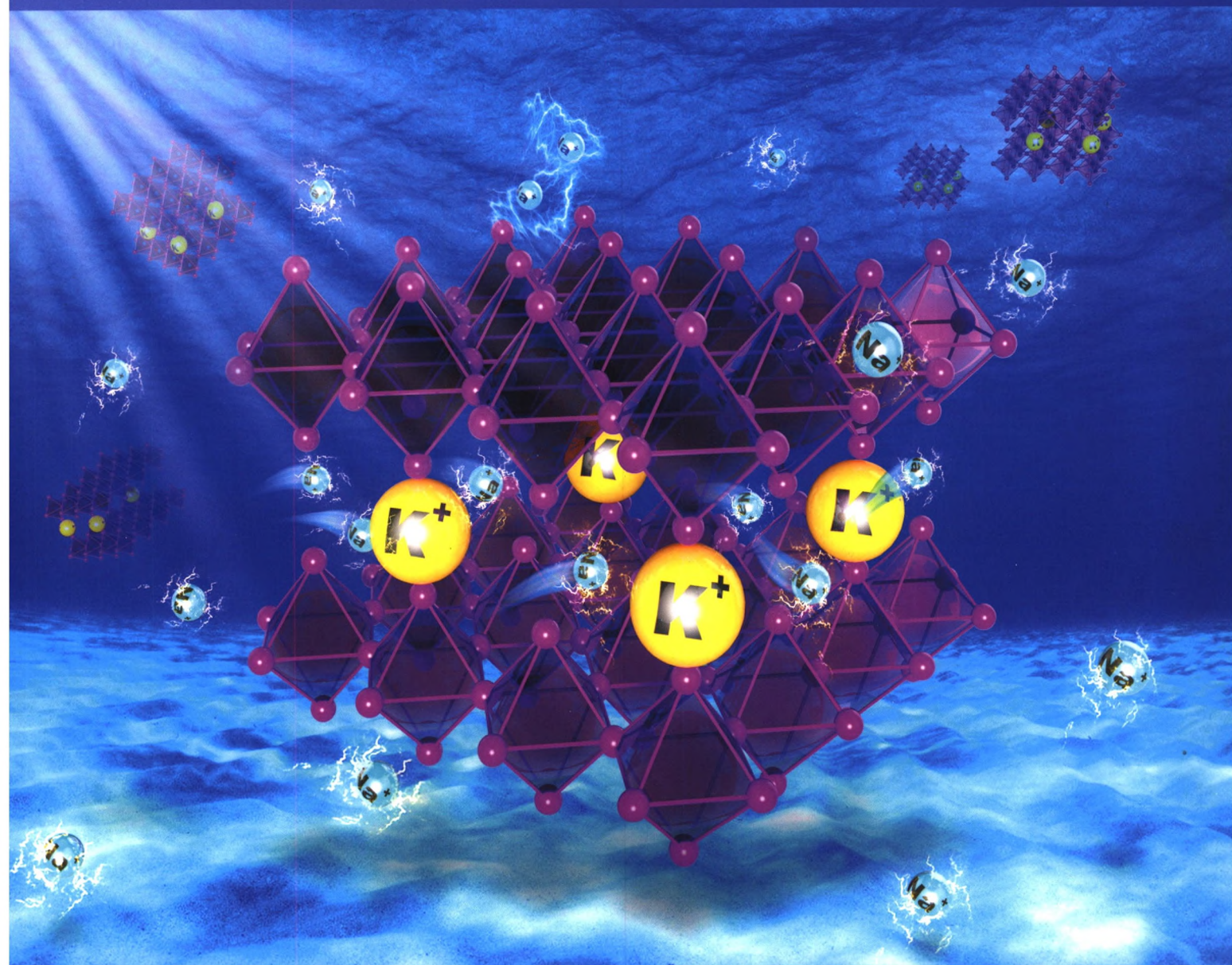
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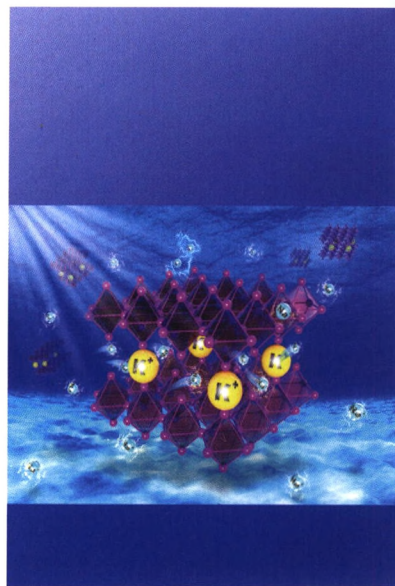
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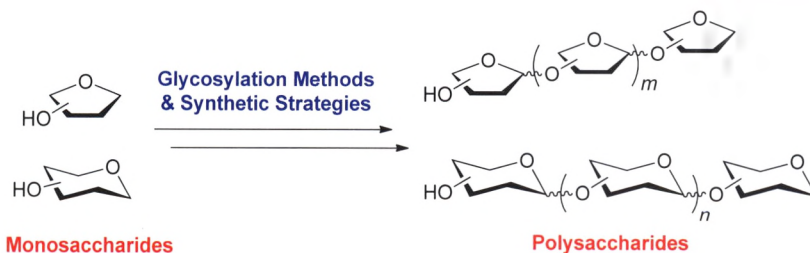
* 通信联系人.

On the cover: Chemical pre-intercalation of K^+ ion renders the layered $Na_5V_{12}O_{32}$ material to possess expanded interlayer spacing and stable structure. The obtained $Na_5K_xV_{12}O_{32}$ shows good rate capability and long-term cycling stability when used as cathode material for Na-ion batteries. [Li, Zhaohui *et al.* on page 625-633.]



Review

Recent Advances in Chemical Synthesis of Polysaccharides

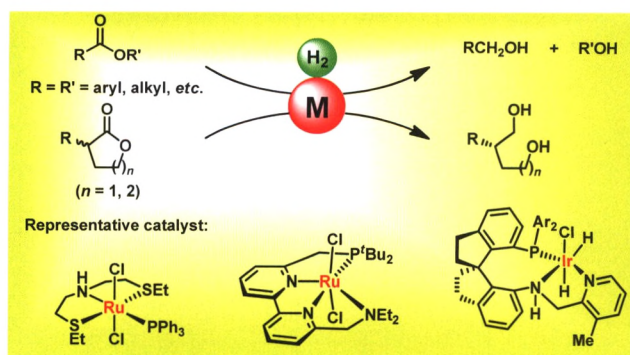


Wu, Yong; Ye, Xin-Shan*

Acta Chim. Sinica **2019**, 77(7), 581-597

Some representative methods and strategies for saccharide synthesis are summarized in this review, and highlights their applications in the chemical synthesis of complex polysaccharides.

Recent Progress in Homogeneous Catalytic Hydrogenation of Esters

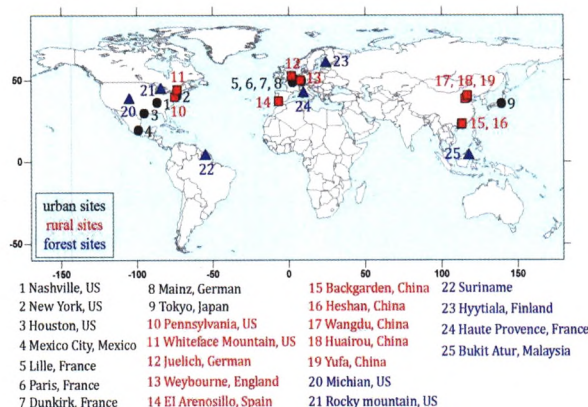


Gu, Xuesong; Li, Xiaogen; Xie, Jianhua*; Zhou, Qilin

Acta Chim. Sinica **2019**, 77(7), 598-612

A brief overview on the progress in homogeneous catalytic hydrogenation of esters achieved in last ten years is presented from two aspects: (1) the development of ligands and transition-metal catalysts; (2) the advances of catalytic asymmetric hydrogenations.

Observations of OH Radical Reactivity in Field Studies



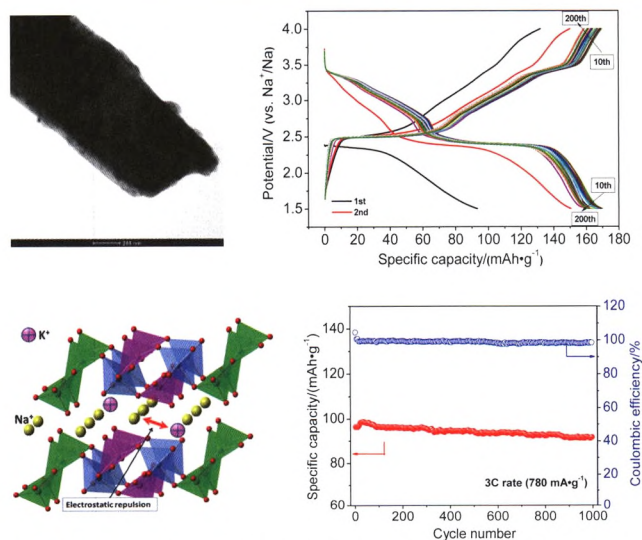
The observation sites of OH radical reactivity globally were summarized in the above figure, including urban, rural and forest areas. The sites are mainly distributed in East Asia, Europe and North America, and the sites in China are mainly concentrated in Beijing-Tianjin-Hebei region and the Pearl River Delta region. The OH radical reactivity varies significantly on spatial, diurnal and seasonal bases. A quantitative study of OH radical reactivity in different environmental conditions will provide an opportunity for the improvement of atmospheric chemical mechanism.

Yang, Xinping; Wang, Haichao; Tan, Zhaofeng; Lu, Keding*; Zhang, Yuanhang*

Acta Chim. Sinica **2019**, 77(7), 613-624

Article

Effect of K-Doping on the Sodium-storage Performance of Sodium Vanadate Nanoplates

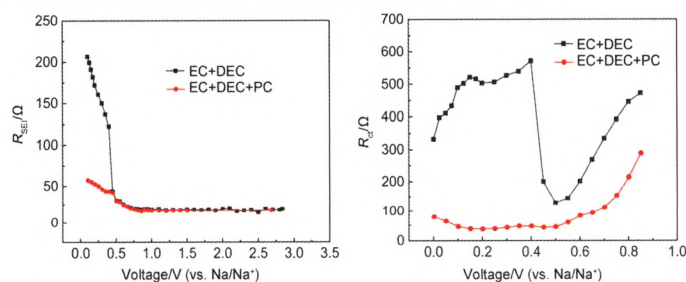


Song, Xuexia; Li, Jicheng; Li, Zhaohui*; Li, Xifei*; Ding, Yanhuai; Xiao, Qizhen; Lei, Gangtie

Acta Chim. Sinica **2019**, 77(7), 625-633

K⁺-doped sodium vanadate ($\text{Na}_5\text{K}_x\text{V}_{12}\text{O}_{32}$) was successfully prepared by a hydrothermal method, and used as cathode material for Na-ion batteries. The as-prepared cathode displayed significant improvements upon rate capability and cyclability by pillar role of K⁺ ions which are doped into interlayer of crystal.

Electrochemical Impedance Spectroscopy Study on the First Sodium Insertion Process of Hard Carbon Material Electrode

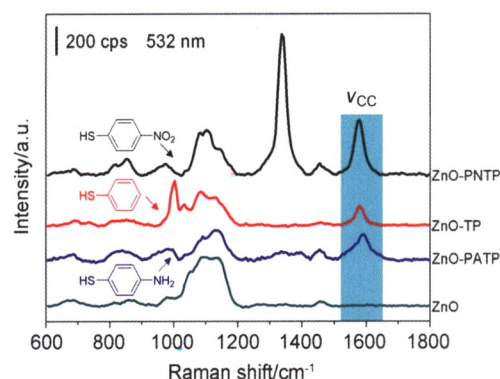


Qu, Luping; Ren, Tong; Wang, Ning; Shi, Yueli; Zhuang, Quanchao*

Acta Chim. Sinica **2019**, 77(7), 634-640

The electrode interface characteristics of hard carbon material electrode in sodium ion battery were discussed by electrochemical impedance spectroscopy, and the electrochemical impedance spectroscopy (EIS) experimental results were fitted by selecting appropriate equivalent circuit. The variation of SEI film resistance and electron resistance with electrode polarization potential in the first week of hard carbon electrode was obtained.

Determination on Origination of Surface Enhanced Raman Scattering Effect on Nano ZnO Substrate



Laser/nm	EF		
	PNTP	TP	PATP
532	9.36	35.42	27.33
638	14.01	25.23	22.36

The SERS enhancement effect of different *para* substituent probes on the broom-like nano-ZnO at different excitation wavelengths was tested, the surface enhancement factor was calculated, and the possible enhancement mechanism was proposed. The enhancement effect of ZnO on *p*-nitrophenylthiophenol (PNTP) is mainly derived from the non-resonant chemical mechanism, while the enhancement effect of ZnO on phenylthiophenol (TP) and *p*-aminophenylthiophenol (PATP) is mainly derived from the charge transfer mechanism.

Ni, Yuxin; Zhang, Chenjie; Yuan, Yaxian*; Xu, Minmin; Yao, Jianlin*

Acta Chim. Sinica 2019, 77(7), 641-646

Al-Ion Polymer Solid Electrolyte

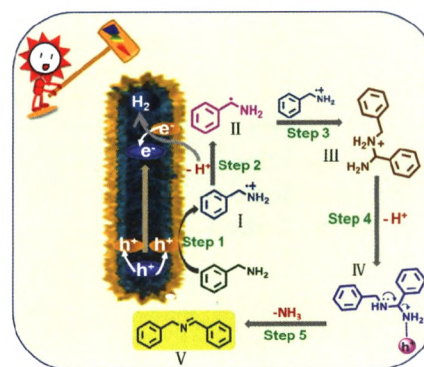


Kang, Shusen*; Fan, Shaocong; Liu, Yan; Wei, Yancun; Li, Ying; Fang, Jingang; Meng, Chuizhou*

Acta Chim. Sinica 2019, 77(7), 647-652

By using crown ether as both functional additive and coordination group as well as PEO as basement through a solution casting method, a new kind of solid Al-ion electrolyte is prepared, which has a high ion-conductivity and broad electrochemical potential window.

Hierarchical In₂S₃/CdIn₂S₄ Heterostructured Nanohybrids as Photocatalyst for Coupling of Benzyl Amines under Visible Light



Liu, Ruxue; He, Xiaoyan; Niu, Litong; Lv, Bolin; Yu, Fei; Zhang, Zhe; Yang, Zhiwang*

Acta Chim. Sinica 2019, 77(7), 653-660

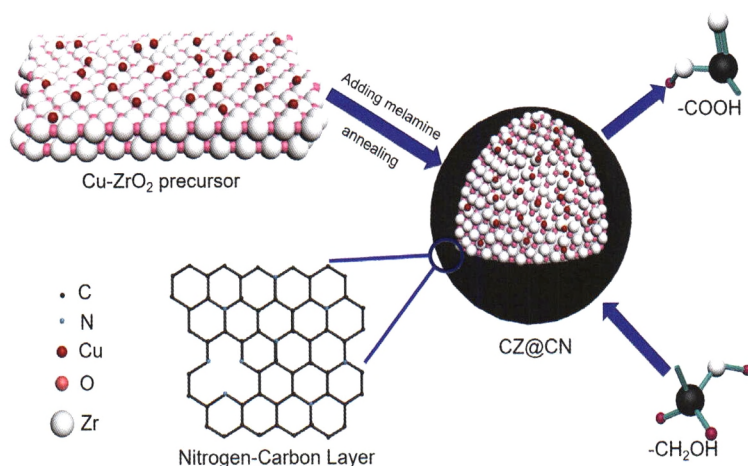
Hierarchical In₂S₃ nanotubes were prepared from NH₂-MIL-68(In) and thiourea, and a cation exchange method was used to synthesize hierarchical In₂S₃/CdIn₂S₄ heterostructured composites. The activity of the as-prepared samples under light illumination was investigated through the photooxidation coupling of benzyl amines. The results revealed that the product of imines could be detected not only in air but also in N₂ conditions, which make the condition of the conversion become milder.

Study on Preparation of Cu-ZrO₂ Catalyst Coated by Nitrogen-Doped Carbon and Catalytic Dehydrogenation Performance

Wang, Yongsheng; Zhao, Yunlu; Zhao, Zhenzhen; Lan, Xiaolin; Xu, Jinxia; Xu, Weixiang; Duan, Zheng kang*

Acta Chim. Sinica **2019**, 77(7), 661-668

A nitrogen-doped carbon-coated copper-zirconium catalyst was successfully prepared by simple pyrolysis method, and showed good oxygen-free dehydrogenation catalytic performance in the reaction of diethanolamine dehydrogenation to prepare iminodiacetic acid. Compared with ordinary copper zirconium catalysts, it had more Lewis basicity and the reaction time was reduced by 40%.



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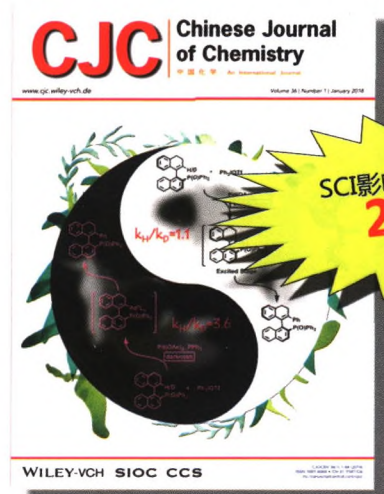
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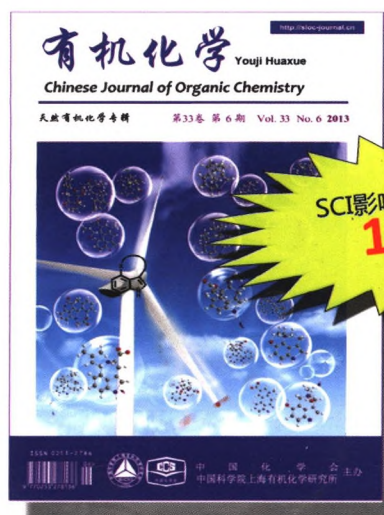
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