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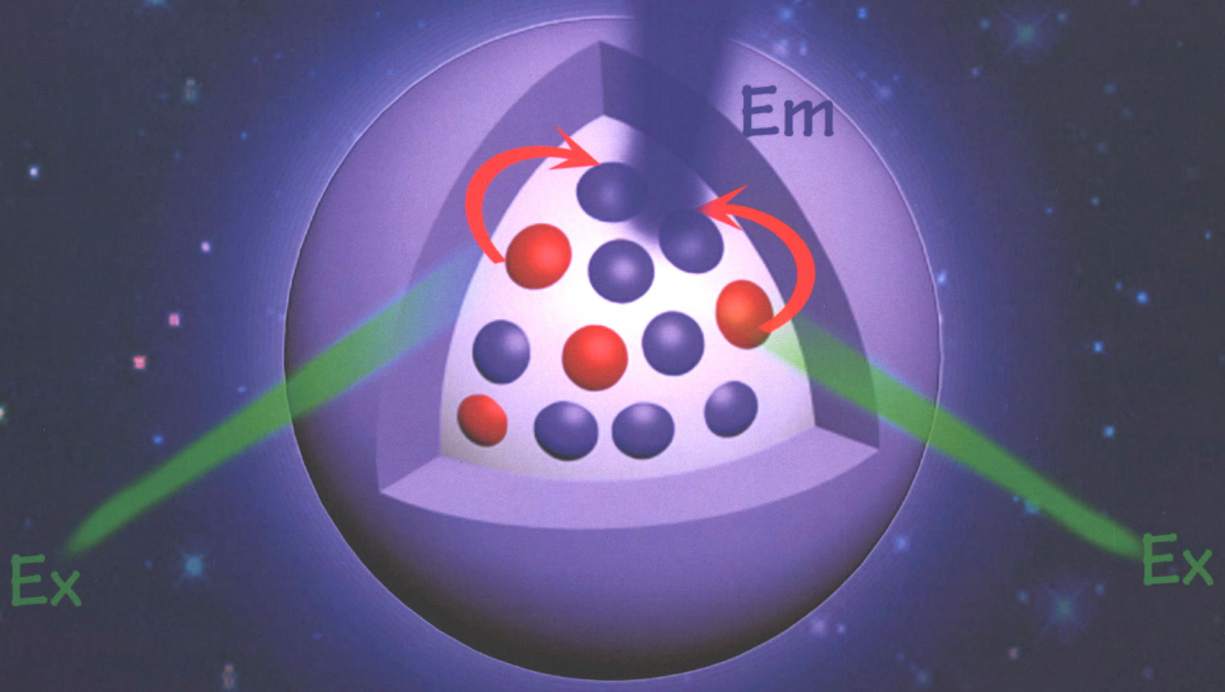
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Triplet-Triplet Annihilation Upconversion Emission

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万方数据



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目次

综述

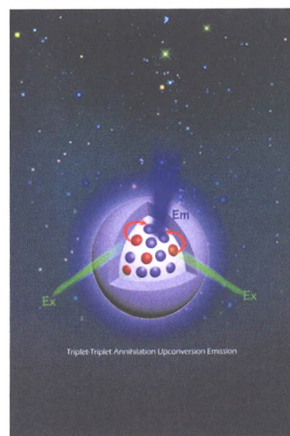
- 钙钛矿材料组分调控策略及其光电器件性能研究进展 陈薪羽, 解俊杰, 王炜, 袁慧慧, 许頔, 张焘, 何云龙, 沈沪江*, 化学学报, 2019, 77(1), 9-23
- 锂离子电池硅基负极粘结剂发展现状 王晓钰, 张渝, 马磊, 魏良明*, 化学学报, 2019, 77(1), 24-40

研究论文

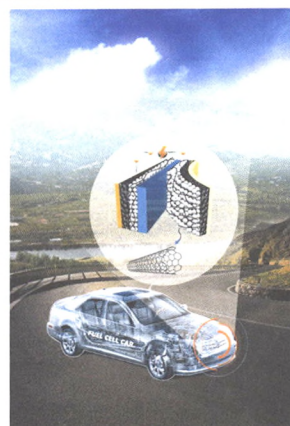
- 基于二氧化硅纳米颗粒的三重态-三重态湮灭上转换研究 何通, 杨晓峰*, 陈玉哲*, 佟振合, 吴骊珠*, 化学学报, 2019, 77(1), 41-46
- 碳纳米管添加剂对质子交换膜燃料电池低铂载量膜电极性能的影响研究 崔丽瑞, 张劲, 孙一焱, 卢善富*, 相艳*, 化学学报, 2019, 77(1), 47-53
- 高活性单分散磺化聚苯乙烯多孔微球用于生物柴油制备研究 罗建新, 颜文海, 马青, 张春燕*, 方怡权, 张栩诚, 汪长春*, 化学学报, 2019, 77(1), 54-59
- 活性位高度暴露的钴/氮/碳电催化剂的构建及氧还原性能研究 张志琦, 葛承宣, 陈玉刚, 吴强*, 杨立军, 王喜章, 胡征, 化学学报, 2019, 77(1), 60-65
- 多孔碳球封装纳米碳化钨催化剂无溶剂催化苄胺偶联反应 李月, 姜宇晨, 蒋平平, 杜盛郁, 姜就胜, 冷炎*, 化学学报, 2019, 77(1), 66-71
- 溶液制备过程引入的甲醇对阿特拉津 UV 光氧化速率和降解机理的影响 刘玉灿*, 苏苗苗, 张岩, 段晋明, 李伟, 化学学报, 2019, 77(1), 72-83
- 铁镍合金纳米颗粒镶嵌的多级孔氮掺杂碳催化剂的制备及析氧性能研究 王艺霖, 王敏杰, 李静*, 魏子栋*, 化学学报, 2019, 77(1), 84-89
- Pd 催化层对含氧氧化钇(YHx:O)薄膜光致变色调节能力的影响 拉毛, 包山虎, 莎仁*, 化学学报, 2019, 77(1), 90-94
- θ 溶剂中树枝形均聚物的自洽场理论计算 付超, 杨颖梓*, 邱枫, 化学学报, 2019, 77(1), 95-102

* 通信联系人.

On the cover: The uniformed silica nanoparticles bearing sensitizer (fluorinated tetraphenylporphyrin platinum) and covalently-connected emitter (siloxane derivatized 9,10-diphenylanthracene) were constructed by micellar template method. The preparation of the water-stable nanoparticles is straightforward. Efficient upconversion emission based on triplet-triplet annihilation was achieved in water. [Wu, Lizhu *et al.* on page 41-46.]

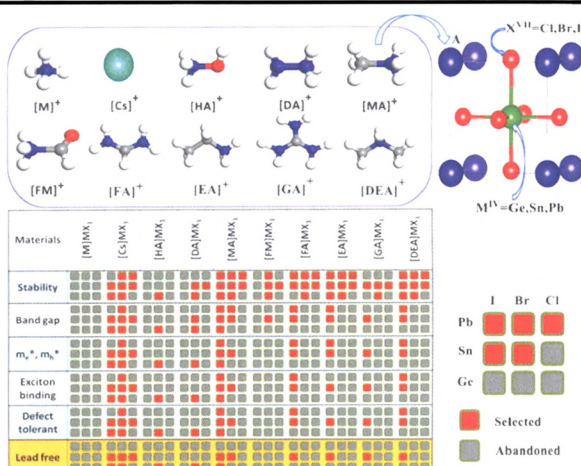


On the inside back cover: Adding carbon nanotubes to low Pt loading catalyst layers improves the utilization of Pt catalysts and mass transfer of reactant and product, as well as decreasing of the contact resistance between catalytic layers and gas diffusion layers, which obviously enhances the performance of proton exchange membrane fuel cell. [Lu, Shanfu *et al.* on page 47-53.]



Review

Research Progress of Compositional Controlling Strategy to Perovskite for High Performance Solar Cells



Chen, Xinyu; Xie, Junjie; Wang, Wei; Yuan, Huihui; Xu, Di; Zhang, Tao; He, Yunlong; Shen, Hujiang*

Acta Chim. Sinica 2019, 77(1), 9-23

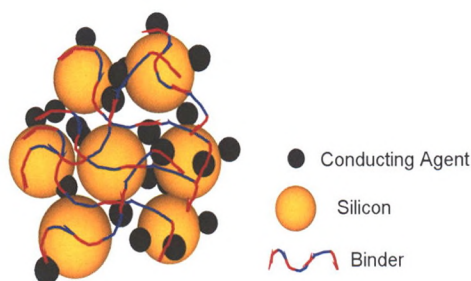
This review summarizes the recent progress on the perovskite materials with different component systems, including some representative material compositions and their effects on the device performance. Moreover, the advantages and disadvantages of perovskite materials with different component systems are compared and summarized. The purpose is to provide ideas on how to improve the efficiency and stability of perovskite solar cells through compositional controlling, and finally realize commercial application.

Recent Development on Binders for Silicon-Based Anodes in Lithium-Ion Batteries

Wang, Xiaoyu; Zhang, Yu; Ma, Lei; Wei, Liangming*

Acta Chim. Sinica 2019, 77(1), 24-40

Article

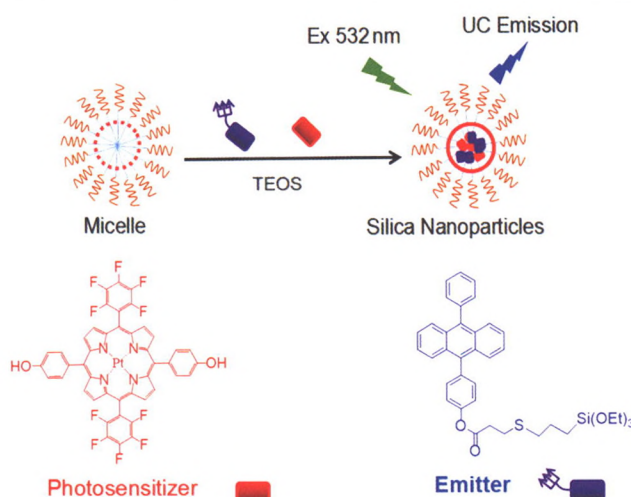


Binders, can improve the contact integrity among the active material, conductive additive and current collector of Li batteries. With different binders, the cracking and comminution caused by the huge volume change can be reduced, finally improving the cycle performance of the battery. Here, we gave a review on the lithium-ion battery silicon-based negative electrode binders systematically, which describes the main performance of different binders for battery properties. We hope our review will provide research directions for the development and application of lithium-ion battery silicon-based anode binders.

Triplet-Triplet Annihilation Upconversion Based on Silica Nanoparticles

He, Tong; Yang, Xiaofeng*; Chen, Yuzhe*; Tong, Zhenhe; Wu, Lizhu*

Acta Chim. Sinica 2019, 77(1), 41-46

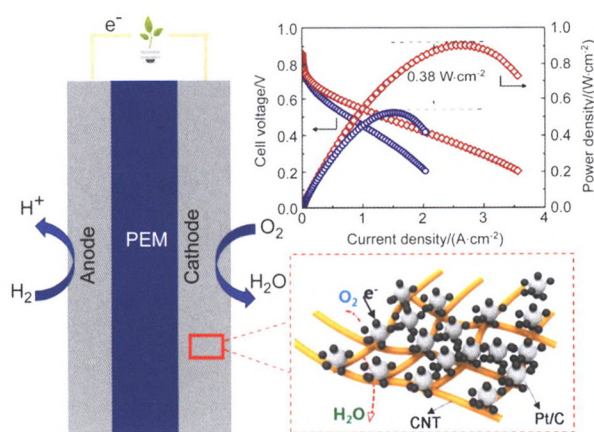


The stable uniformed silica nanoparticles bearing sensitizer and covalently-connected emitter were constructed by micellar template method. Efficient upconversion emission based on triplet-triplet annihilation was achieved in water.

Effect of Addition of Carbon Nanotubes on the Performance of a Low Pt Loading Membrane-Electrode-Assembly in Proton Exchange Membrane Fuel Cells

Cui, Lirui; Zhang, Jin; Sun, Yiyang; Lu, Shanfu*; Xiang, Yan*

Acta Chim. Sinica 2019, 77(1), 47-53

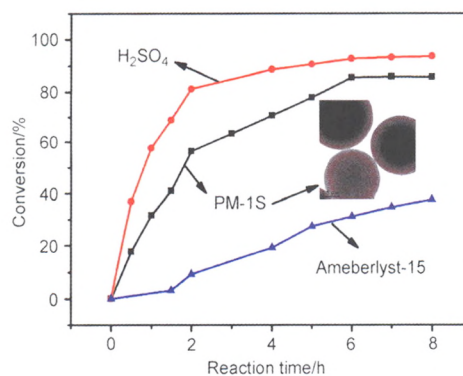


Carbon nanotube (CNT) is added to the low-Pt loading catalytic layers (0.1 mg_{Pt}·cm⁻²) as an additive to study the effect of addition methods on microstructure of the catalytic layer and cell performance. The study shows that mixing of CNT and Pt/C catalyst into a catalytic layer is an effective method for improving the Pt utilization and reducing the loading of Pt catalyst.

Study on High Activity Monodispersed Sulfonated Porous Polystyrene Microspheres for Preparation of Biodiesel

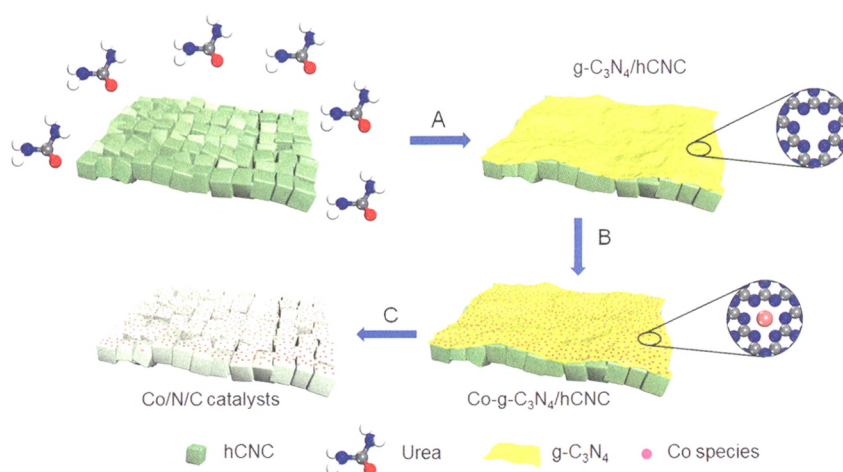
Luo, Jianxin; Yan, Wenhai; Ma, Qing; Zhang, Chunyan*; Fang, Yiquan; Zhang, Xucheng; Wang, Changchun*

Acta Chim. Sinica **2019**, 77(1), 54-59



Sulfonated polystyrene microspheres (PM-1S) with high acid density were prepared by a facile two-step synthesis technique. The obtained sulfonated porous polystyrene microspheres exhibit high catalytic activity and good durability for preparation of biodiesel.

Construction of Cobalt/Nitrogen/Carbon Electrocatalysts with Highly Exposed Active Sites for Oxygen Reduction Reaction

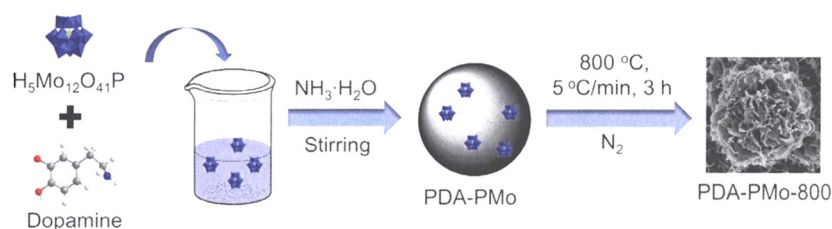


Zhang, Zhiqi; Ge, Chengxuan; Chen, Yugang; Wu, Qiang*; Yang, Lijun; Wang, Xizhang; Hu, Zheng

Acta Chim. Sinica **2019**, 77(1), 60-65

Cobalt/nitrogen/carbon electrocatalysts with highly exposed active sites are readily constructed by pyrolyzing Co^{2+} coordinated $\text{g-C}_3\text{N}_4$ on high-conductive hierarchical carbon nanocages (hCNC). The optimized catalyst exhibits high ORR activity comparable to Pt/C catalyst, with much better stability and high immunity to methanol crossover in alkaline medium.

Molybdenum Nanocarbides Encapsulated in Porous Carbon Spheres for Solvent-free Benzyl Amine Oxidative Coupling Reactions

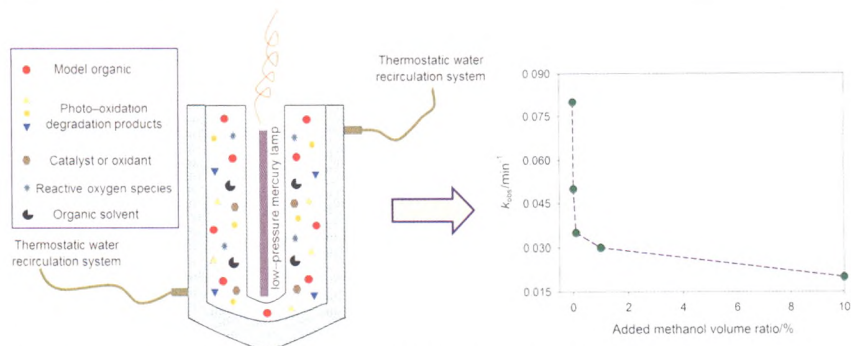


Li, Yue; Jiang, Yuchen; Jiang, Pingping; Du, Shengyu; Jiang, Jiusheng; Leng, Yan*

Acta Chim. Sinica **2019**, 77(1), 66-71

A new type of porous carbon-encapsulated Mo_2C was successfully prepared by pyrolysis PMo-contained dopamine polymer. The obtained catalyst exhibited high activity and selectivity in oxidative coupling of benzyl amines to form imines, and it can be repeatedly used and maintained good activity.

Influence Rule of Organic Solvents Methanol from Sample Preparation on Degradation Rate and Mechanism of Atrazine in UV-based Oxidation Processes

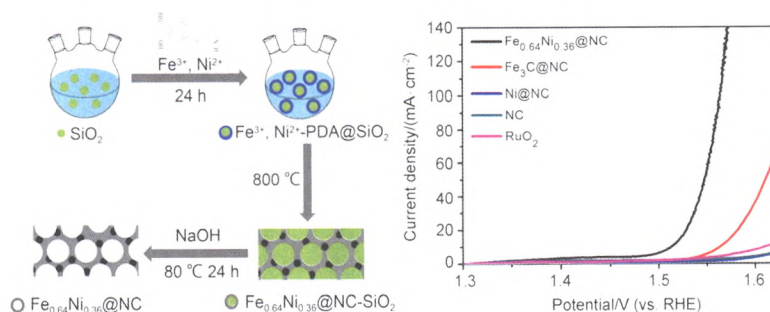


The effect of organic solvents on the reaction rate and degradation mechanism of atrazine has been investigated in three photo-oxidation processes. The results show that methanol does not affect the reaction rate of atrazine in a sole-UV process, and has a small effect on the reaction rate of atrazine in a UV/H₂O₂ process. However, methanol has a significant effect on the reaction rate of atrazine in a UV/TiO₂ process. In addition, the presence and content of methanol did not change the degradation mechanism of atrazine.

Liu, Yucan*; Su, Miaomiao; Zhang, Yan; Duan, Jinming; Li, Wei

Acta Chim. Sinica 2019, 77(1), 72-83

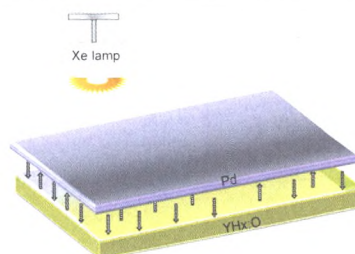
Iron/nickel Alloy Nanoparticles Embedded in N-doped Porous Carbon for Robust Oxygen Evolution Reaction



Wang, Yilin; Wang, Minjie; Li, Jing*; Wei, Zidong*

Acta Chim. Sinica 2019, 77(1), 84-89

Effect of the Pd Layer on Optical Regulation Properties of the Oxygen Containing Yttrium Hydrides



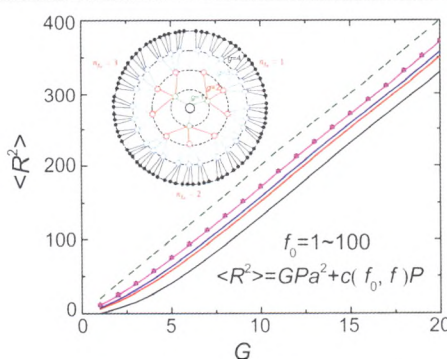
The oxygen-containing yttrium hydride (YH_x:O) thin films coated with Pd were prepared by the magnetron sputtering method. In the initial state, the films showed a yellowish transparent state with high transmittance in the visible and near IR range. After illumination, the solar transmittance (T_{sol}) of the films sharply decreased 37.39% with dark state. This great optical change of the YH_x:O/Pd resulted from the synergistic reaction of the two layers.

As we know, the metal Pd is an excellent catalyst for hydrogenation and dehydrogenation and the photochromic materials of the oxygen-containing yttrium hydride require introducing or releasing the hydrogen to achieve reversible transmittance change. This accelerates the photochromic process by transfer of the hydrogen from the YH_x:O film layer to the Pd.

La, Mao; Bao, Shan-Hu; Sha, Ren*

Acta Chim. Sinica 2019, 77(1), 90-94

Self-Consistent Field Theory of Dendritic Homopolymers in θ Solvent



Fu, Chao; Yang, Yingzi*; Qiu, Feng

Acta Chim. Sinica 2019, 77(1), 95-102

The segment density profile and scaling law of dendrimer in solvent are investigated by self-consistent field theory. The scaling law curves are obtained with different functionality of the center segment f_0 . The results of the self-consistent field calculation (colored symbols) show the power law relation $\langle R^2 \rangle \approx GPa^2$, which agrees well with the Rouse Model's prediction (solid lines) with large f_0 and G .



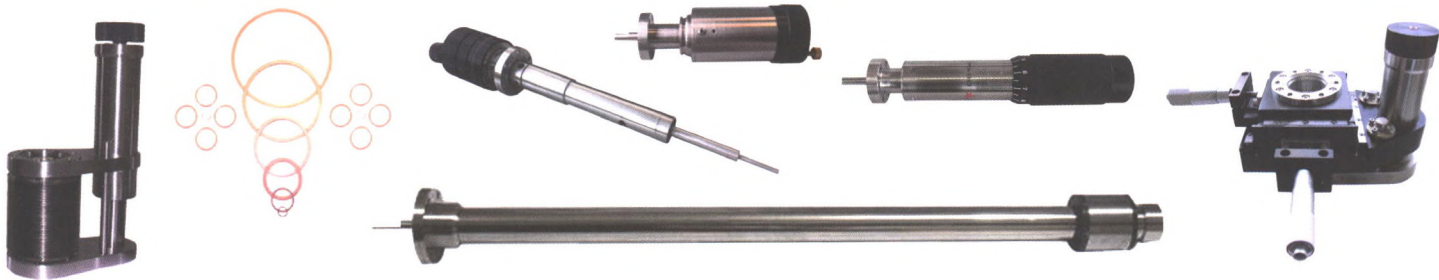
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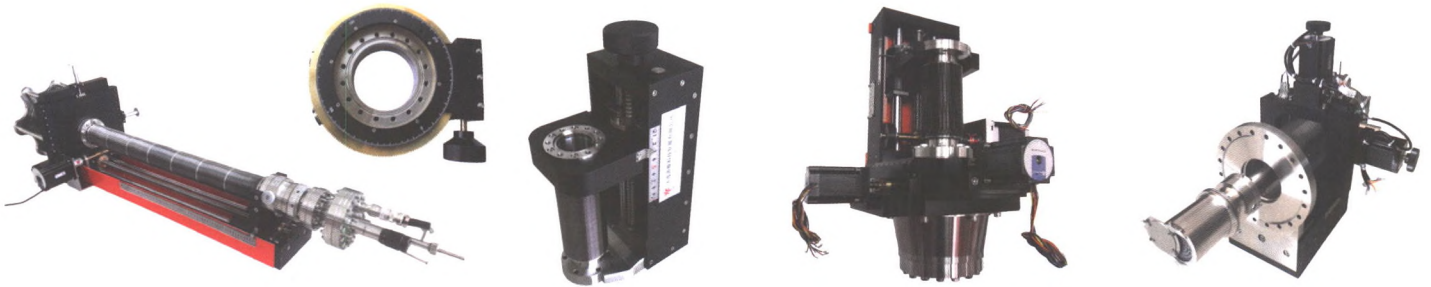
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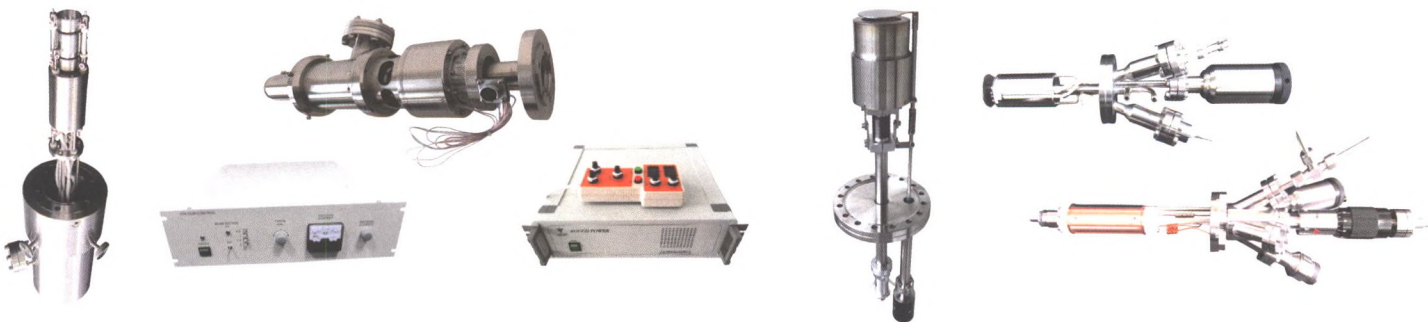
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