上海高研院

2022年度上海市科学技术奖拟推荐项目公示内容（二）

**一、项目名称**

氢能燃料电池实用催化剂可控合成、宏量制备及应用

**二、知识产权情况**

1. 一种牺牲氧化镁载体制备铂黑/铂钌黑纳米电催化剂的方法，杨辉，刘娟英，ZL201210218965.9

2. 一种制备碳载纳米铂铬金属间化合物作为质子交换膜燃料电池阴极催化剂的方法，邹志青，邹亮亮，杨辉，ZL201310740349.4

3. 一种质子交换膜燃料电池用碳载PtCo金属间化合物催化剂的制备方法及其应用，邹志青，杨文华，杨辉，邹亮亮，黄庆红， ZL201610486392.6

4. 高载量铂镍有序金属间化合物及其制备方法和用途，杨辉，王亚蒙，邹志青，黄庆红，邹亮亮，ZL201610259468.1

5. 钻氮掺杂碳纳米棒催化剂及其制备方法与应用，杨辉，程庆庆，邹志青，邹亮亮，周扬，汪保国，ZL201510933353.1

6. 提高纳米电催化剂稳定性的方法，邹亮亮，马玉南，帅志龙，章利丰，ZL201711471819.6

7. IrRu基多元合金氧析出催化剂及其制备方法，邹亮亮，刘培，刘得友，杨辉，ZL202011579958.2

8. 一种MEA包胶的密封结构及其制造方法和使用方法，顾志军，陈杰，周震，ZL201710791654.4

9. 一种质子交换膜燃料电池催化层的制备方法，王丽娜，张伟，刘向，王涛，ZL201310436528.9

10. 一种燃料电池膜电极及其制备方法，侯向理，涂序国，袁博，ZL202110197047.1

**三、发表论文著作情况**

1. Y Xiong, Y Ma, L Zou, S Han, H Chen, S Wang, M Gu, Y Shen, L Zhang, Z Xia, Jun Li, H Yang，N-doping induced tensile-strained Pt nanoparticles ensuring an excellent durability of the oxygen reduction reaction, ***Journal of Catalysis***, 2020, 382, 247–255.

2. Q Cheng, S Yang, C Fu, L Zou, Z Zou, Z Jiang, J Zhang, H Yang; High-loaded sub-6 nm Pt1Co1 intermetallic compounds with highly efficient performance expression in PEMFCs, ***Energy & Environmental Science,*** 2022, 15(1): 278-286.

3. Q Cheng, C Hu, Z Zou, H Yang, L Dai; Carbon-Defect-Driven Electroless Deposition of Pt Atomic Clusters for Highly Efficient Hydrogen Evolution, ***Journal of the American Chemical Society***, 2020, 142(12): 5594-5601.

4. L Zou, J Fan, Y Zhou, C Wang, J Li, Z Zou, and H Yang, Conversion of PtNi alloy from disordered to ordered for enhanced activity and durability in methanol-tolerant oxygen reduction reactions，***Nano Research****,* 2015, 8(8): 2777–2788.

5. L Zou, J Li, T Yuan, Y Zhou, X Li and H Yang, Structural transformation of carbon-supported Pt3Cr nanoparticles from a disordered to an ordered phase as a durable oxygen reduction electrocatalyst, ***Nanoscale***, 2014, 6(18): 10686-10692.

6*.* Q Huang, F Tao, L Zou, T Yuan, Z Zou, H Zhang, X Zhang, H Yang, One-step synthesis of Pt nanoparticles highly loaded on graphene aerogel as durable oxygen reduction electrocatalyst, ***Electrochimica Acta***, 2015, 152, 140-145.

7. L Zou, J Guo, J Liu, Z Zou, DL Akins, H Yang, Highly alloyed PtRu black electrocatalysts for methanol oxidation prepared using magnesia nanoparticles as sacrificial templates, ***Journal of Power Sources***, 2014, 248, 356-362.

8. P Wang, Q Cheng, C Mao, W Su, L Yang, G Wang, L Zou, Y Shi, C Yan, Z Zou, H Yang, Regulation of oxygen vacancy within oxide pyrochlores by F-doping to boost oxygen-evolution activity, ***Journal of Power Sources***, 2021, 502, 229903-229910.

9. Q Cheng, L Yang, L Zou, Z Zou, C Chen, Z Hu, H Yang, Single cobalt atom and N codoped carbon nanofibers as highly durable electrocatalyst for oxygen reduction reaction, ***ACS Catalysis***, 2017, 7 (10), 6864-6871.

10. Q Cheng, S Han, K Mao, C Chen, L Yang, Z Zou, M Gu, Z Hu, H Yang, Co nanoparticle embedded in atomically-dispersed Co-NC nanofibers for oxygen reduction with high activity and remarkable durability, ***Nano Energy***, 2018, 52, 485-493.

**四、主要完成单位**

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**七、提名等级**

上海市技术发明奖一等奖