



Metal-Organic Framework Derived FeP/C Interlocked Graphene Hybrid Composite for Hydrogen Evolution Reaction

Huang, Wei; Sun, Hongyu; Mølhave, Kristian; Zhang, Jingdong

Published in:

Book of Abstracts Sustain 2017

Publication date:

2017

Document Version

Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):

Huang, W., Sun, H., Mølhave, K., & Zhang, J. (2017). Metal-Organic Framework Derived FeP/C Interlocked Graphene Hybrid Composite for Hydrogen Evolution Reaction. In *Book of Abstracts Sustain 2017* Article C-13

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Metal-Organic Framework Derived FeP/C Interlocked Graphene Hybrid Composite for Hydrogen Evolution Reaction

Wei Huang¹, Hongyu Sun², Kristian Mølhav² and Jingdong Zhang^{*1}

*Corresponding author email: jz@kemi.dtu.dk

Due to large-scale energy demanding, global warming and limited sources, developing clean energy technology is very imperative. Hydrogen (H₂) is a clean and sustainable energy source for replacing fossil fuels in the future. Currently, Platinum (Pt) and Pt-based catalysis exhibit the most effective performance for the hydrogen evolution reaction (HER). However, Pt-based catalysts give multiple obstacles, such as limited resources, high cost, thus restrict the further development. Therefore, exploring and designing efficient and durable noble-metal-free HER catalysts utilizing earth-abundant elements (such as iron resource) to replace Pt for HER catalysis are important[1, 2] In this poster, we presented an in-situ approach for metal-organic framework (MOF) derived FeP/C interlocked graphene hybrid composite for HER, C@FeP nanoparticles interconnected with reduced graphene oxide (rGO), in which networks could provide abundant surface for the loading of active materials with sufficient active sites for the HER. It is expected that FeP/C interlocked graphene hybrid composite shows good electrocatalytic ability and durability for HER.

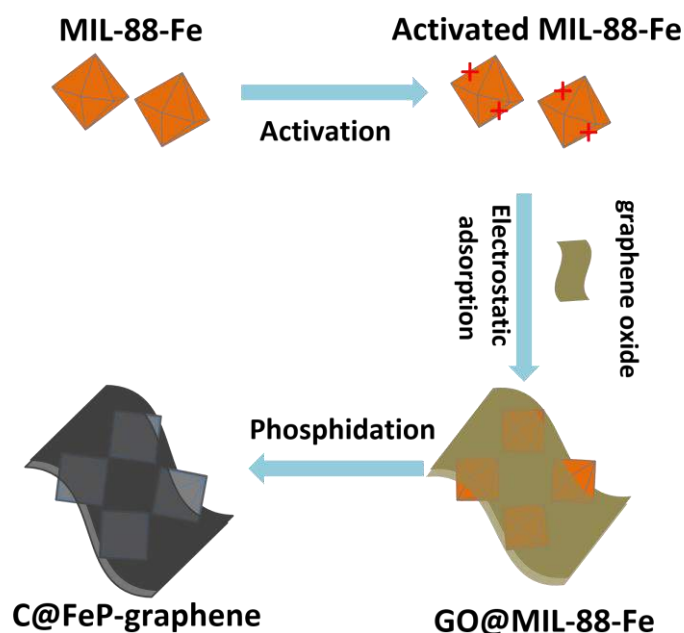


Fig.1. Schematic illustration of the synthesis process of C@FeP-graphene composite. Not drawn to scale.

Acknowledgments

Wei Huang acknowledges the China Scholarship Council for a PhD scholarship (201706220080).

References

- [1] D.G. Nocera, The Artificial Leaf, *Acc. Chem. Res.*, 45 (2012) 767-776.
- [2] J.A. Turner, Sustainable Hydrogen Production, *Science*, 305 (2004) 972-974.