

Supplementary Information

The approaches of measuring surface area of metal oxide electrocatalysts: for determining the intrinsic electrocatalytic activity

Chao Wei,^a Shengnan Sun,^a Daniel Mandler,^{bc} Xun Wang,^d Shi Zhang Qiao^e and Zhichuan J. Xu^{*acfg}

^aSchool of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore. Email: xuzc@ntu.edu.sg

^bInstitute of Chemistry, The Hebrew University of Jerusalem, Jerusalem 9190401, Israel;

^cSingapore-HUJ Alliance for Research and Enterprise (SHARE), Nanomaterials for Energy and Energy-Water Nexus (NEW), Campus for Research Excellence and Technological Enterprise (CREATE), Singapore 138602, Singapore;

^dKey Lab of Organic Optoelectronics and Molecular Engineering, Department of Chemistry, Tsinghua University, Beijing, 100084, China;

^eSchool of Chemical Engineering, The University of Adelaide, Adelaide, South Australia 5005, Australia;

^fSolar Fuels Laboratory, Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore;

^gEnergy Research Institute @ Nanyang Technological University, 50 Nanyang Avenue, 639798, Singapore;

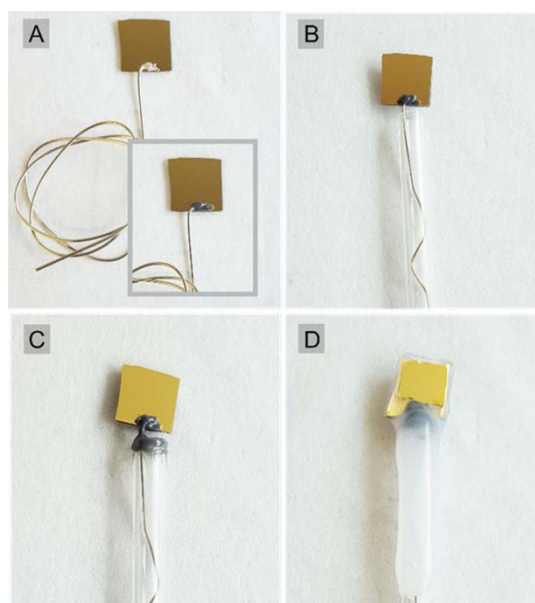


Fig. S1 Step-wise procedures for working electrode fabrication of $\text{Ni(Fe)O}_x\text{H}_y$ films grown on Au substrate. (a) Tinned-copper wire is attached to the electrode with silver paint and covered with epoxy (inset). (b) Wire is inserted into a soft glass tube. (c) Au substrate is attached to the soft glass tube by using epoxy. (d) All glass, epoxy, and tinned copper wire are covered with hot glue. This figure reproduced from ref. 1 with permission from American Chemical Society, copyright 2017.

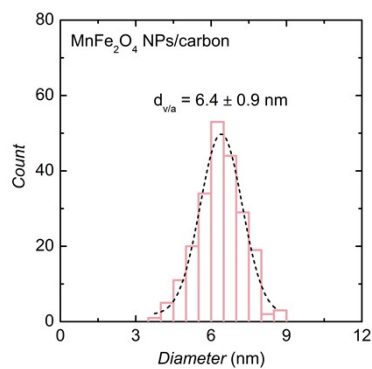


Fig. S2 Size distribution histogram of MnFe₂O₄ NPs (loaded on Vulcan carbon) by counting at least 200 particles. This figure reproduced from ref. 2 with permission from Springer Nature, copyright 2017.

References

1. M. B. Stevens, L. J. Enman, A. S. Batchellor, M. R. Cosby, A. E. Vise, C. D. M. Trang and S. W. Boettcher, *Chem. Mater.*, 2017, 29, 120-140.
2. Y. Zhou, Y. Du, S. Xi and Z. J. Xu, *Electrocatalysis*, 2017, 9, 287-292.