

Mixed-dimensional Heterostructure of Graphene Foam for Tunable Ecofriendly Hydrogen Evolution Reaction

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Abstract: Carbon allotropes are environment friendly substances and allotropes of carbon, especially graphene, are extensively studied for green energy storage devices such as fuel cells.[1-3] In this regard, hydrogen evolution reaction (HER) is one of the key reactions for the water splitting and production of environment friendly hydrogen fuel cells.[3] Synergetic effect of hydrophilic and hydrophobic carbon can be used to obtain tunable ecofriendly HER.[4] Herein, mixed-dimensional heterostructure of graphene foam (synthesized via chemical vapor deposition[5, 6]) with graphene oxide (synthesized via Hummers method) was used for the observation of HER in an acidic solution (Fig. 1). The porosity of graphene foam shows an influence on catalytic properties, which is further tuned by coating graphene oxide. In this way, the active sites on the exposed surface of the specimens are tuned which has automatically tuned the HER.

References

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Figures

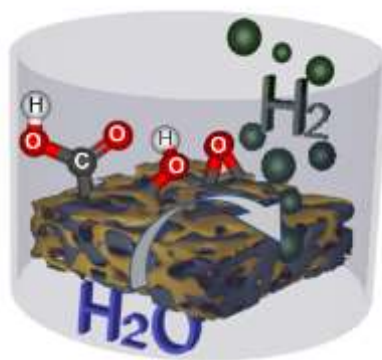


Figure 1: Mechanism of HER in GO coated GF