# Article information:

Introducing High‐Valence Iridium Single Atoms into Bimetal Phosphides toward High‐Efficiency Oxygen Evolution and Overall Water Splitting - Yang - Small - Wiley Online Library  
<https://onlinelibrary.wiley.com/doi/full/10.1002/smll.202207253>

# Article summary:

1. This article discusses a thermal reduction method to introduce high-valence iridium (Ir) single atoms into bimetal phosphide (FeNiP) nanoparticles for high-efficiency oxygen evolution reaction (OER) and overall water splitting.

2. The presence of high-valence single Ir atoms and their synergistic interaction with Ni3+ species, as well as the disproportionation of Ni3+ assisted by Fe, contribute to the exceptional OER performance.

3. Computational simulations confirm the vital role of high-valence Ir to weaken the adsorption of OER intermediates, favorable for accelerating OER kinetics.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article is generally trustworthy and reliable in its presentation of research findings. It provides a comprehensive overview of the research conducted, including an introduction to the topic, a description of the methods used, results from experiments and simulations, and discussion of implications for future research. The authors provide evidence for their claims in the form of experimental data and computational simulations, which adds credibility to their conclusions. Additionally, they acknowledge potential limitations in their work such as cost constraints associated with using noble metal oxides as catalysts for OER.

However, there are some areas where the article could be improved upon in terms of trustworthiness and reliability. For example, while it does mention potential risks associated with using transition metal compounds as substitutes for noble metal oxides, it does not explore these risks in detail or discuss possible solutions or mitigation strategies that could be employed to reduce them. Additionally, while it does present both sides of the argument regarding using transition metal compounds versus noble metal oxides as catalysts for OER, it does not do so equally; instead it focuses more heavily on promoting transition metals over noble metals without providing sufficient evidence or counterarguments to support this position. Finally, there is some promotional content included in the article which could be seen as biased towards certain products or technologies mentioned within it; this should be avoided in order to maintain objectivity and impartiality when presenting research findings.

# Topics for further research:

* Noble metal oxide catalysts for OER
* Transition metal compound catalysts for OER
* Risks associated with transition metal catalysts
* Mitigation strategies for transition metal catalysts
* Cost constraints of noble metal oxide catalysts
* Advantages of noble metal oxide catalysts

# Report location:

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