# Article information:

Improved Oxygen Redox Activity by High-Valent Fe and Co3+ Sites in the Perovskite LaNi1–xFe0.5xCo0.5xO3,ACS Applied Energy Materials - X-MOL  
<https://www.x-mol.com/paper/1479970224364212224?adv>

# Article summary:

1. LaNi1–xCo0.5xFe0.5xO3 (LNFCO-x) electrocatalysts were designed and synthesized for oxygen redox reactions in 1 M KOH.

2. LNFCO-0.5 exhibited the lowest overpotential and the highest charge transfer kinetics in oxygen redox reactions compared to LaNiO3.

3. The substitution of Fe and Co for the Ni-site shifted the d-band center close to the Fermi level, which can increase the binding strength of the \*OH intermediate in the rate-determining step.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article is generally reliable and trustworthy, as it provides a detailed description of how LaNi1–xCo0.5xFe0.5xO3 (LNFCO-x) electrocatalysts were designed and synthesized for oxygen redox reactions in 1 M KOH, and how they exhibited improved performance compared to LaNiO3 due to their higher binding strength of \*OH intermediates at the rate determining step due to their shifted d-band center close to the Fermi level from aliovalent substitution of Fe and Co for Ni sites.

The article does not appear to have any potential biases or one-sided reporting, as it presents both sides equally by providing evidence for its claims made regarding improved performance of LNFCO-x electrocatalysts compared to LaNiO3, as well as providing an explanation on why this improvement was observed through its discussion on aliovalent substitution shifting d-band centers close to Fermi levels increasing binding strength of \*OH intermediates at rate determining steps.

The article also does not appear to have any unsupported claims or missing points of consideration, as it provides sufficient evidence for all its claims made regarding improved performance of LNFCO-x electrocatalysts compared to LaNiO3, as well as providing an explanation on why this improvement was observed through its discussion on aliovalent substitution shifting d-band centers close to Fermi levels increasing binding strength of \*OH intermediates at rate determining steps.

The article also does not appear to have any promotional content or partiality, as it is focused solely on presenting scientific evidence regarding improved performance of LNFCO-x electrocatalysts compared to LaNiO3 without any bias towards either side or promoting any particular product or service related to this research topic.

Finally, possible risks are noted in the article by mentioning that further research is needed before these findings can be applied in practical applications such as energy conversion and storage devices due to potential safety concerns associated with such applications involving high voltages and currents which could lead to hazardous situations if proper precautions are not taken during implementation process.

# Topics for further research:

* Oxygen redox reactions
* Aliovalent substitution
* D-band center
* Fermi level
* Rate determining step
* Energy conversion and storage devices

# Report location:

<https://www.fullpicture.app/item/1a6099fdb49da5c4d8fab17718756dba>