# Article information:

Covalent organic frameworks with Ni-Bis(dithiolene) and Co-porphyrin units as bifunctional catalysts for Li-O2 batteries | Science Advances
[https://www.science.org/doi/full/10.1126/sciadv.adf2398?rfr\_dat=cr\_pub++0pubmed=Z39.88-2003=ori%3Arid%3Acrossref.org](https://www.science.org/doi/full/10.1126/sciadv.adf2398?rfr_dat=cr_pub++0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org)

# Article summary:

1. A covalent organic framework (COF) platform was constructed by combining Ni-bis(dithiolene) and Co-porphyrin units to create a bifunctional cathode catalyst for Li-O2 batteries.

2. The resulting bimetallic Ni/Co-COF showed high surface area, good electrical conductivity, and excellent chemical stability.

3. Li-O2 batteries with the Ni/Co-COF–based cathode exhibited low discharge/charge potential gap (1.0 V) and stable cycling (200 cycles) at a current density of 500 mA g−1, rivaling that of PtAu nanocrystals.

# 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 trustworthy and reliable in its reporting of the research findings. The authors provide detailed information about the design of the COF platform, as well as the synthesis process used to create it. They also provide evidence from experiments such as PXRD, HRTEM, FTIR, UV-Vis DR spectroscopy, SEM, EDS elemental mapping analysis, N2 adsorption measurements, DFT pore size distribution analysis, and control experiments using nonmetal or single metal–based isostructural COFs to support their claims about the performance of the Ni/Co-COF–based cathode in Li-O2 batteries.

The article does not appear to be biased or one-sided in its reporting; it presents both sides equally by providing evidence from experiments to support its claims as well as discussing possible limitations of the research findings. There are no unsupported claims or missing points of consideration; all relevant information is provided in detail throughout the article. Furthermore, there is no promotional content or partiality present in the article; it simply reports on the research findings objectively without any bias towards any particular viewpoint or opinion. Finally, possible risks associated with using this technology are noted throughout the article; for example, it mentions that traditional cathode materials often suffer from low catalytic activity/selectivity during cell discharging and charging (22).

# Topics for further research:

* Li-O2 battery cathode materials
* Metal-organic frameworks (MOFs)
* Nickel-cobalt-based COFs
* PXRD, HRTEM, FTIR, UV-Vis DR spectroscopy
* N2 adsorption measurements
* DFT pore size distribution analysis

# Report location:

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