# Article information:

Phosphorus Tailors the d‐Band Center of Copper Atomic Sites for Efficient CO2 Photoreduction under Visible‐Light Irradiation - Sun - 2022 - Angewandte Chemie International Edition - Wiley Online Library  
<https://onlinelibrary.wiley.com/doi/10.1002/anie.202207677>

# Article summary:

1. Carbon dioxide (CO2) consumption has caused severe global warming and climate change, and photocatalytic reduction of CO2 with water (H2O) using solar energy is a more ecofriendly approach to tackle these issues.

2. Single atom catalysts (SACs) with atomic metal dispersion on a solid support have shown great potential in photocatalytic CO2RR, but when H2O is used as a reductant in CO2RR, the reduction of protons into hydrogen (H2) limits the overall CO2 reduction yields.

3. This study proposes a stepwise approach to incorporate phosphorus (P) and single copper (Cu) atoms into polymeric carbon nitride (C3N4), which can be used to tune the electronic configurations of single metal sites and optimize their photocatalytic efficiencies for CO2RR under visible-light irradiation.

# 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 “Phosphorus Tailors the d‐Band Center of Copper Atomic Sites for Efficient CO2 Photoreduction under Visible‐Light Irradiation” provides an overview of how incorporating phosphorus into polymeric carbon nitride can be used to tune the electronic configurations of single metal sites and optimize their photocatalytic efficiencies for CO2RR under visible-light irradiation. The article is well written and provides detailed information about the process, as well as experimental results that support its claims.

The article does not appear to have any major biases or unsupported claims, as it presents both sides equally and provides evidence for its claims. It also mentions possible risks associated with this process, such as H2O splitting occurring simultaneously as a competitive process during CO2RR, which could limit overall yields. Additionally, it explores counterarguments by discussing how modifying the electronic states near the Fermi level of catalysts can control reaction paths by adjusting adsorption properties of intermediates.

In conclusion, this article appears to be reliable and trustworthy due to its balanced presentation of both sides and evidence provided for its claims.

# Topics for further research:

* Visible-Light Photocatalysis
* CO2 Reduction Reaction
* Phosphorus-Modified Carbon Nitride
* Electronic Configuration Tuning
* H2O Splitting
* Adsorption Properties of Intermediates

# Report location:

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