# Article information:

Potential-Driven Restructuring of Cu Single Atoms to Nanoparticles for Boosting the Electrochemical Reduction of Nitrate to Ammonia | Journal of the American Chemical Society  
<https://pubs.acs.org/doi/10.1021/jacs.2c02262>

# Article summary:

1. The article explores the restructuring of Cu single atoms to nanoparticles during electrochemical reduction of nitrate to ammonia.

2. The maximum production rate of ammonia was found to be 4.5 mg cm–2 h–1 with a Faradaic efficiency of 84.7% at −1.00 V versus RHE.

3. Post-deposited Cu NP catalyst and density functional theory calculations were used to corroborate that the Cu nanoparticles are the genuine active sites for nitrate reduction to ammonia.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, as it provides evidence from post-deposited Cu NP catalyst and density functional theory calculations to support its claims about the potential-driven restructuring of Cu single atoms to nanoparticles for boosting the electrochemical reduction of nitrate to ammonia. The article also presents both sides equally, noting possible risks associated with the process such as potential environmental impacts due to increased ammonia production rates. However, there are some missing points of consideration in the article, such as potential economic costs associated with this process or any other alternative processes that could be used instead. Additionally, there is no mention of any unexplored counterarguments or unsupported claims in the article, which could have been addressed in order to further strengthen its reliability and trustworthiness.

# Topics for further research:

* Economic costs of nitrate reduction to ammonia
* Alternative processes for nitrate reduction to ammonia
* Environmental impacts of increased ammonia production
* Potential risks of Cu single atom catalysts
* Counterarguments to Cu single atom catalysts
* Unsupported claims regarding Cu single atom catalysts

# Report location:

<https://www.fullpicture.app/item/16fef800f41d57a6bc4829e655144a37>