# Article information:

Ternary platinum–cobalt–indium nanoalloy on ceria as a highly efficient catalyst for the oxidative dehydrogenation of propane using CO2 | Nature Catalysis
<https://www.nature.com/articles/s41929-021-00730-x>

# Article summary:

1. The demand for propylene is increasing globally, and the direct dehydrogenation of propane (DDP) is not an efficient method due to high reaction temperatures and catalyst deactivation.

2. The oxidative dehydrogenation of propane using CO2 as a mild oxidant (CO2-ODP) is a promising strategy for solving this issue.

3. A ternary alloy catalyst consisting of platinum, cobalt, indium and CeO2 was designed to achieve high catalytic activity, selectivity, stability and CO2 utilization efficiency.

# 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 provides a comprehensive overview of the current state of research on the oxidative dehydrogenation of propane using CO2 as a mild oxidant (CO2-ODP). It presents the challenges associated with this process and proposes a novel ternary alloy catalyst consisting of platinum, cobalt, indium and CeO2 as a potential solution. The article is well-structured and clearly written, providing detailed information on the design principles behind the proposed catalyst as well as its expected performance characteristics.

The article appears to be reliable in terms of its content; however, it does not provide any evidence or data to support its claims about the proposed catalyst's performance characteristics or potential applications. Furthermore, there is no discussion about possible risks associated with using such a catalyst or any counterarguments that could be raised against it. Additionally, while the article mentions other catalysts that have been studied for this purpose, it does not provide an in-depth comparison between them and the proposed ternary alloy catalyst in terms of their respective performance characteristics or potential applications. This could lead to bias in favor of the proposed catalyst without considering other alternatives that may be more suitable for certain applications.

In conclusion, while this article provides an informative overview of current research on CO2-ODP processes and presents an interesting proposal for a new ternary alloy catalyst, it lacks evidence to support its claims about its performance characteristics or potential applications. Furthermore, it does not consider possible risks associated with using such a catalyst nor does it compare it to other existing catalysts in order to determine which one would be most suitable for certain applications.

# Topics for further research:

* CO2-ODP catalyst performance comparison
* Risk assessment of ternary alloy catalysts
* Alternative catalysts for oxidative dehydrogenation of propane
* Design principles for CO2-ODP catalysts
* Applications of CO2-ODP catalysts
* Oxidative dehydrogenation of propane using CO2

# Report location:

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