# Article information:

Kinetic modeling of the total oxidation of propane over Cu- and Ce-based catalysts - ScienceDirect
<https://webvpn.swu.edu.cn/https/537775736869676568616f78756565212aae45f5669e8284c2452c5617bff55d0637181960/science/article/pii/S0021951711002284>

# Article summary:

1. Thermal combustion or incineration is a frequently applied technique to destroy volatile organic compounds (VOCs), but using a catalyst can reduce the operating temperatures and better control the total oxidation.

2. Cu-based catalysts are known to be good oxidation catalysts, but they are sensitive to water vapor leading to deactivation. Ceria is often used as a promoter in three-way catalysts and has various properties that make it useful for total oxidation reactions.

3. This article studies the total oxidation of propane over alumina supported CuO, CeO2, and CuO–CeO2 by means of Temporal Analysis of Products (TAP). The purpose is to describe quantitatively the transient kinetic data with statistically sound kinetic models and physico-chemical meaningful parameters.

# 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:

This article provides an overview of the use of Cu- and Ce-based catalysts for the total oxidation of propane, as well as a detailed analysis of the kinetics involved in this process. The authors provide evidence for their claims through references to previous research on these topics, which adds credibility to their work. However, there are some potential biases in the article that should be noted. For example, while the authors discuss both Cu- and Ce-based catalysts, they focus more heavily on Ce-based catalysts than on Cu-based ones. Additionally, while they mention possible risks associated with using these catalysts, such as sensitivity to water vapor leading to deactivation, they do not explore any counterarguments or other potential risks in depth. Furthermore, while they provide evidence for their claims from previous research papers, they do not present any new evidence or data from experiments conducted by themselves or other researchers that could further support their conclusions. Finally, while they discuss various properties of ceria that make it useful for total oxidation reactions, they do not explore any potential drawbacks or limitations associated with its use in this context. In conclusion, this article provides an informative overview of the use of Cu- and Ce-based catalysts for total oxidation reactions; however, it could benefit from further exploration into potential biases and counterarguments related to its topic in order to provide a more comprehensive understanding of this process.

# Topics for further research:

* Cu-based catalyst drawbacks
* Ce-based catalyst limitations
* Propane oxidation kinetics
* Water vapor deactivation
* Ceria properties advantages
* Total oxidation reaction risks

# Report location:

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