# Article information:

NH3/空气、NH3/H2/空气、NH3/CO/空气和NH3/CH4/空气预混火焰层流燃烧速度的实验和动力学建模研究 - ScienceDirect
<https://webvpn.dlut.edu.cn/https/77726476706e69737468656265737421e7e056d234336155700b8ca891472636a6d29e640e/science/article/pii/S0010218019302068?via%3Dihub=>

# Article summary:

1. NH3 has been proposed as an energy carrier to store and transport intermittent renewable energy sources, but it requires high energy for ignition and presents low burning velocities compared with conventional hydrocarbon fuels.

2. Co-firing NH3 with fuels of higher reactivity, such as H2, has been proposed to overcome these disadvantages.

3. Limited studies have been conducted on the laminar burning velocities of NH3 blended with other fuels, such as CH4 and CO, and more research is needed to develop reliable chemical kinetic mechanisms for NH3 combustion.

# 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 discusses the potential of ammonia (NH3) as an energy carrier to reduce CO2 emissions and increase the utilization of renewable, low- or non-carbon fuels in power and energy systems. The article highlights the need for effective methods to burn NH3, given its high energy requirement for ignition and low burning velocities compared with conventional hydrocarbon fuels.

The article provides a comprehensive review of previous studies on laminar burning velocities of NH3 and its blends with other fuels in air. However, the article acknowledges that information available on key combustion features is still insufficient and often inconsistent among limited studies. The article also notes that co-firing NH3 with fuels of higher reactivity, such as hydrogen (H2), has been proposed to overcome these disadvantages.

One potential bias in the article is its focus on the potential benefits of NH3 as an energy carrier without discussing any potential risks or drawbacks associated with its use. For example, NH3 is highly toxic and can pose significant health risks if not handled properly. Additionally, there may be environmental concerns related to the production and transportation of NH3.

Another limitation of the article is its narrow focus on laminar burning velocities of NH3 and its blends with other fuels in air. While this is an important aspect to consider when developing reliable chemical kinetic mechanisms for NH3 combustion, it does not provide a comprehensive analysis of all factors that need to be considered when evaluating the feasibility and sustainability of using NH3 as an energy carrier.

Overall, while the article provides valuable insights into the potential benefits of using NH3 as an energy carrier, it would benefit from a more balanced discussion that considers both the advantages and disadvantages associated with its use. Additionally, future research should explore a broader range of factors beyond laminar burning velocities when evaluating the feasibility and sustainability of using NH3 as an energy carrier.

# Topics for further research:

* Environmental impact of NH3 production and transportation
* Health risks associated with NH3 handling
* NH3 combustion efficiency in different types of engines
* NH3 storage and distribution infrastructure
* Cost-effectiveness of NH3 as an energy carrier compared to other alternatives
* Potential for NH3 to be used as a fuel for transportation
* such as in fuel cells or as a replacement for gasoline or diesel.

# Report location:

<https://www.fullpicture.app/item/00427d023c2ac56d797db1681f0f0720>