# Article information:

On explosive boiling of a multicomponent Leidenfrost drop | PNAS
<https://www.pnas.org/doi/full/10.1073/pnas.2016107118>

# Article summary:

1. This article investigates the boiling process of a ternary drop, which is initially in the Leidenfrost state over a superheated surface.

2. The boiling process is divided into four stages: from transparent miscible ouzo drop to emulsification due to microdroplet nucleation; formation of an oil cap on the upper half of the drop; and finally, explosion of the drop due to direct contact with the superheated surface.

3. The study exemplifies the richness of phenomena which can occur in multicomponent drop systems with phase transition, and offers potential for improved atomization characteristics.

# 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 provides a comprehensive overview of the boiling process of a ternary drop, which is initially in the Leidenfrost state over a superheated surface. It is well-structured and clearly written, providing detailed descriptions and explanations for each stage of the boiling process as well as quantitative analysis for volume evolution and evaporation rate. The article also provides sketches to illustrate each stage, making it easier for readers to understand the complex phenomena described in this article.

The authors have provided sufficient evidence to support their claims, such as experimental results from four life stages of a Leidenfrost ouzo drop, calculations for volume evolution and evaporation rate, three further independent experimental realizations with similar results, etc. Furthermore, they have also provided references to relevant studies conducted by other researchers in order to back up their claims.

In terms of trustworthiness and reliability, there are no obvious biases or unsupported claims in this article. All points are presented objectively without any promotional content or partiality towards any particular point of view. Possible risks associated with this research are noted throughout the article as well as possible counterarguments that could be explored further in future studies. Both sides are presented equally without any one-sided reporting or missing points of consideration. Therefore, overall this article can be considered trustworthy and reliable.

# Topics for further research:

* Leidenfrost effect
* Superheated surface boiling
* Ternary drop evaporation
* Volume evolution of droplets
* Evaporation rate of droplets
* Experimental studies of boiling process

# Report location:

<https://www.fullpicture.app/item/7188a1c06ec9842ba153b5b81abc8c35>