# Article information:

Metals | Free Full-Text | Precipitation Behavior of O Phase during Continuous Cooling of Ti-22Al-25Nb Alloy
<https://www.mdpi.com/2075-4701/12/2/291>

# Article summary:

1. The microstructure evolution and formation mechanism of the O phase in a Ti-22Al-25Nb (at.%) orthorhombic alloy resulting from different cooling rates were investigated.

2. The morphology of the precipitated O phase is significantly affected by the cooling rate, with floccular O composed of many fine acicular O phases gradually growing into lamellar O phase as the cooling rate decreases.

3. The analysis indicates that there can be more than one nucleation site for the O phase on a single B2 grain boundary to form the OGB, and that rim O phase formed through a decomposition reaction of α2→α2 (Nb-lean) + O (Nb-rich) is controlled by a diffusional mechanism and maintains a specific orientation relationship with the parent α2 particles.

# 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 in-depth investigation into the microstructure evolution and formation mechanism of the O phase in a Ti-22Al-25Nb (at.%) orthorhombic alloy resulting from different cooling rates. The authors provide detailed descriptions of their experimental procedure, results, and analysis, which are supported by relevant literature citations throughout the article. The authors also provide clear explanations for their conclusions regarding how different cooling rates affect the morphology of precipitated O phases, as well as how multiple nucleation sites can form on single B2 grain boundaries to form an OGB and how rim O phases are formed through a decomposition reaction of α2→α2 (Nb-lean) +O (Nb-rich).

The article appears to be unbiased and presents both sides equally; however, it does not explore any potential counterarguments or risks associated with its findings or conclusions. Additionally, while it does cite relevant literature throughout its text, it does not provide any evidence for some of its claims made about how different cooling rates affect microstructure evolution or formation mechanisms for certain phases. Furthermore, while it does mention possible promotional content related to its findings at various points throughout its text, it does not provide any further detail or explanation regarding this content or its implications for practical applications.

In conclusion, this article provides an in-depth investigation into microstructure evolution and formation mechanisms for certain phases in Ti-22Al-25Nb alloys cooled at different rates; however, it could benefit from providing further evidence for some of its claims made about these

# Topics for further research:

* Microstructure evolution of Ti-22Al-25Nb alloys
* Formation mechanisms of O phase in Ti-22Al-25Nb alloys
* Effects of cooling rate on microstructure evolution
* Multiple nucleation sites on B2 grain boundaries
* Decomposition reaction of α2→α2 (Nb-lean) +O (Nb-rich)
* Practical applications of Ti-22Al-25Nb alloys

# Report location:

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