# Article information:

The influence of the grain boundary phase on the mechanical properties of Si3N4–MoSi2 composites - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S1359645407000432>

# Article summary:

1. The microstructure and mechanical properties of Si3N4–MoSi2 composites doped with two different sintering additive systems, Y2O3–Al2O3 and Lu2O3, were investigated.

2. The Si3N4–MoSi2 composite containing Lu2O3 had higher elastic modulus and better creep resistance at elevated temperatures (>1000°C) than the composite doped with Y2O3–Al2O3.

3. The inclusion of MoSi2 particles in Si3N4 can improve their fracture toughness through residual stresses induced by the coefficient of thermal expansion mismatch of Si3N4 and MoSi2.

# 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:

The article “The influence of the grain boundary phase on the mechanical properties of Si3N4–MoSi2 composites” is a well-written piece that provides an in-depth analysis of the effects of different sintering additives on the mechanical properties of Si3N4–MoSi2 composites at different temperatures up to 1200°C. The article is based on research conducted by the authors, which makes it reliable and trustworthy. Furthermore, the authors provide evidence for their claims in the form of references to previous studies, which adds to its credibility.

However, there are some points that could be improved upon in order to make this article more reliable and trustworthy. For example, while the authors discuss how different sintering additives affect the mechanical properties of Si3N4–MoSi2 composites, they do not explore any potential risks associated with using these additives or any possible counterarguments that could be made against them. Additionally, while they mention that MoSi2 particles can improve fracture toughness through residual stresses induced by thermal expansion mismatch between Si3N4 and MoSi2, they do not provide any evidence for this claim or explore other possible explanations for this phenomenon.

In conclusion, while this article is generally reliable and trustworthy due to its reliance on research conducted by the authors as well as its use of references to previous studies, there are some areas where it could be improved upon in order to make it even more reliable and trustworthy.

# Topics for further research:

* Risks associated with sintering additives
* Thermal expansion mismatch between Si3N4 and MoSi2
* Fracture toughness of Si3N4–MoSi2 composites
* Effects of temperature on mechanical properties
* Alternative explanations for residual stresses
* Advantages of using MoSi2 particles

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