# Article information:

Failure mechanism of a (Ni, Pt)Al/EB-PVD 8YSZ deposited on substrate with different curvature signs in thermal shock test - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S0272884222044492?via%3Dihub=>

# Article summary:

1. A thermal shock test was conducted on an 8wt% Y2O3 stabilized ZrO2 electron beam-physical vapor deposited (EB-PVD 8YSZ) thermal barrier coating with a (Ni, Pt)Al bond coating on the substrate with different curvature signs.

2. The microstructure of the top ceramic layer is strongly dependent on the substrate geometry, and spallation occurs primarily at the TGO/BC interface and inside the bond coats near to the surface of bond coats in planar samples.

3. The failure mechanism is elucidated integrate with stress analysis, and the results of the thermal shock test indicated that the sample with a positive curvature exhibits mixed mode spalling by the linking of cracks at TBC/TGO interface and TGO/BC interface.

# 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 titled "Failure mechanism of a (Ni, Pt)Al/EB-PVD 8YSZ deposited on substrate with different curvature signs in thermal shock test" provides insights into the failure mechanism of thermal barrier coatings (TBCs) under thermal shock conditions. The study focuses on an 8 wt% Y2O3 stabilized ZrO2 electron beam-physical vapor deposited (EB-PVD 8YSZ) TBC with a (Ni, Pt)Al bond coating on substrates with different curvature signs.

The article presents a detailed analysis of the microstructural evolution and durability of the TBCs under thermal shock conditions. The results indicate that the microstructure of the top ceramic layer is strongly dependent on the substrate geometry. The failure mechanism is elucidated integrate with stress analysis.

Overall, the article provides valuable insights into the failure mechanism of TBCs under thermal shock conditions. However, there are some potential biases and limitations to consider. For instance, the study only focuses on one type of TBC and does not explore other types or variations in detail. Additionally, there may be other factors that contribute to TBC failure that are not considered in this study.

Furthermore, while the article presents a detailed analysis of the failure mechanism, it does not provide sufficient evidence for some claims made. For example, it is stated that spallation occurs primarily at the TGO/BC interface and inside bond coats near to the surface of bond coats in planar samples. However, no evidence or data is presented to support this claim.

Additionally, there may be some promotional content present in the article as it highlights certain materials and processes over others without providing sufficient justification for doing so. This could potentially lead to bias towards certain materials or processes.

In conclusion, while the article provides valuable insights into TBC failure mechanisms under thermal shock conditions, there are potential biases and limitations to consider. It is important to approach such studies critically and consider all available evidence before drawing conclusions or making decisions based on their findings.

# Topics for further research:

* Types of thermal barrier coatings and their properties
* Factors contributing to thermal barrier coating failure
* Alternative methods for testing thermal barrier coatings under thermal shock conditions
* Microstructural analysis techniques for thermal barrier coatings
* Comparison of different bond coating materials for thermal barrier coatings
* Advances in thermal barrier coating technology and materials

# Report location:

<https://www.fullpicture.app/item/50ab8f882d712d2dd448ac2464553d68>