# Article information:

Island scanning pattern optimization for residual deformation mitigation in laser powder bed fusion via sequential inherent strain method and sensitivity analysis - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S2214860421002815>

# Article summary:

1. Laser powder bed fusion (L-PBF) is a popular additive manufacturing approach for fabricating metal parts with complex geometries and intricate internal structures.

2. This work proposes an island scanning pattern design method to optimize the scanning direction of each island in order to reduce part deformation after cutting off the build platform.

3. Experiments demonstrate that the residual deformation of both parts fabricated by optimized scanning pattern can be reduced by over 50% compared to the initial scanning patterns, which demonstrate the effectiveness of the proposed method.

# 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 “Island Scanning Pattern Optimization for Residual Deformation Mitigation in Laser Powder Bed Fusion via Sequential Inherent Strain Method and Sensitivity Analysis” is a well-written and comprehensive article that provides an overview of a novel approach to reducing residual deformation in laser powder bed fusion (L-PBF). The authors provide evidence from experiments conducted using an open architecture L-PBF machine, demonstrating that their proposed method is effective at reducing residual deformation by over 50%.

The article does not appear to have any major biases or one-sided reporting, as it presents both sides of the argument fairly and objectively. The authors also provide evidence for their claims, such as citing previous studies on similar topics and providing results from experiments conducted using their proposed method. Furthermore, they discuss potential risks associated with their proposed method, such as possible build failures due to high temperature gradients near the laser beam or rapid heating and cooling.

The only potential issue with this article is that it does not explore any counterarguments or alternative approaches to reducing residual deformation in L-PBF processes. However, this is understandable given that this article focuses solely on presenting a novel approach to reducing residual deformation in L-PBF processes rather than exploring all possible solutions.

In conclusion, this article appears to be trustworthy and reliable overall, as it provides evidence for its claims and discusses potential risks associated with its proposed method.

# Topics for further research:

* Laser Powder Bed Fusion (L-PBF)
* Residual Deformation Mitigation
* Sequential Inherent Strain Method
* Sensitivity Analysis
* Temperature Gradients
* Rapid Heating and Cooling

# Report location:

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