# Article information:

Anisotropic yielding behavior of rolling textured high purity titanium - ScienceDirect  
<https://www.sciencedirect.com/science/article/abs/pii/S0921509315003470>

# Article summary:

1. Rolling textured high purity α-Ti exhibits significant yielding anisotropy, with the yield strength being largest in the normal direction (ND), followed by the transverse direction (TD) and rolling direction (RD).

2. The activation stress analysis of three important deformation modes (prismatic, basal, and pyramidal 〈a〉 slips) was conducted based on the Schmid factor and effective critical resolved shear stress. The specific crystallographic orientation of the material caused by rolling texture influences the activity of each deformation mode, which significantly varies with the loading direction.

3. Understanding yielding anisotropy related to crystallographic texture is crucial for material design, especially for hexagonal close packed (HCP) structure metals like α-Ti, where limited slip systems with a large difference in their critical resolved shear stress exist. Identifying a deformation mode that governs material yielding and how it changes with loading direction is essential for understanding anisotropic yielding behavior of polycrystalline α-Ti.

# 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:

作为一篇科学论文，该文章的内容相对客观，但仍存在一些偏见和缺失的考虑点。首先，文章没有探讨材料的制备过程对其性能的影响，这可能会导致实验结果的不确定性。其次，文章只关注了材料在压缩方向上的变形行为，而忽略了其他方向上的变形行为。此外，在讨论材料中不同滑移系统对应的激活应力时，文章没有考虑到温度和应变速率等因素对激活应力的影响。

此外，在文章中提到了HCP结构金属比立方结构金属更容易出现屈服各向异性，但并没有给出足够的证据来支持这个主张。另外，在讨论材料中不同滑移系统对应的激活应力时，文章没有提供足够的数据来支持其结论。

总之，尽管该文章在某些方面存在一些偏见和缺失考虑点，但它仍然是一篇有价值的科学研究成果，并且可以为相关领域提供有用信息。

# Topics for further research:

* Material preparation process and its impact on performance
* Deformation behavior in directions other than compression
* Influence of temperature and strain rate on activation stress
* Evidence supporting the claim of yield anisotropy in HCP metals
* Sufficient data to support conclusions on activation stress for different slip systems
* Overall value of the scientific research despite biases and omissions

# Report location:

<https://www.fullpicture.app/item/252ac8094b51ad4c5df8d8052b6ceb65>