# Article information:

Three-dimensional mesoscopic investigation of the compression mechanical properties of ultra-high performance concrete containing coarse aggregates - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0958946522002712>

# Article summary:

1. UHPC (ultra-high performance concrete) has excellent properties such as ultra-high compressive strength, high durability, and high flexural strength.

2. The inclusion of coarse aggregates in UHPC can improve its overall stability and strength while reducing the amount of cementitious materials used and limiting shrinkage.

3. Meso-mechanical numerical analysis is an effective approach for studying the damage behavior of concrete at the mesoscopic level, which includes aggregates, mortar, and ITZ (interfacial transition zone).

# 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:

该文章主要介绍了添加粗骨料对超高性能混凝土（UHPC）压缩力学性能的影响，并提出了一种新的三维填充模型和介观模型来研究UHPC的性能。然而，该文章存在以下问题：

1. 偏袒：该文章只强调了添加粗骨料对UHPC性能的积极影响，但未探讨其可能带来的负面影响或潜在风险。例如，添加粗骨料可能会导致混凝土内部空隙增加，从而降低其密实度和耐久性。

2. 片面报道：该文章只关注了UHPC中添加粗骨料的优点，但未提及其他可能的改进方法或材料组成。例如，使用更先进的水泥替代传统水泥可以显著提高混凝土的强度和耐久性。

3. 缺失考虑点：该文章没有考虑到不同类型和尺寸的粗骨料对UHPC性能的影响可能是不同的。此外，它也没有考虑到其他因素如温度、湿度等环境因素对UHPC性能的影响。

4. 无根据主张：该文章声称添加适量粗骨料可以显著提高混凝土强度和稳定性，但未提供足够证据支持这一主张。此外，在实际工程应用中，添加粗骨料是否真正可以降低成本还需要进一步研究。

5. 宣传内容：该文章似乎旨在宣传UHPC作为一种优秀建筑材料，并忽略了其他可行选项。此外，在介绍UHPC时也没有提及其制备过程中可能产生的环境污染问题。

总之，尽管该文章提供了有价值的信息和研究结果，但仍存在偏袒、片面报道、无根据主张等问题。为了更全面地评估UHPC及其应用前景，需要进行更多相关研究并考虑各种因素。

# Topics for further research:

* Potential negative effects of adding coarse aggregates to UHPC
* Other possible improvement methods or material compositions for UHPC
* The influence of different types and sizes of coarse aggregates and environmental factors on UHPC performance
* The lack of sufficient evidence to support the claim that adding coarse aggregates can significantly improve UHPC strength and stability
* The need to consider other viable options besides UHPC and potential environmental pollution during its production process
* The importance of conducting further research to comprehensively evaluate UHPC and its application prospects.

# Report location:

<https://www.fullpicture.app/item/b772437e4ccfe234b8878366cb142b93>