# Article information:

New development of ultra-high-performance concrete (UHPC) - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S1359836821005989>

# Article summary:

1. Ultra-high-performance concrete (UHPC) is a promising construction material for sustainable and resilient infrastructure due to its low water-to-binder ratio, high particle packing density, high-volume of steel fibers, and proper addition of chemical admixtures.

2. UHPC has superior workability, mechanical properties, and durability compared with conventional concrete but faces challenges such as low workability for large-volume production, high autogenous shrinkage, insufficient flexural/tensile properties, and unpredictable durability after concrete cracking.

3. State-of-the-art technologies are being developed to improve UHPC mixtures' properties by designing methodologies, using typical ingredients such as binders, aggregates, chemical admixtures, and fibers; improving and controlling key properties such as workability, autogenous shrinkage, compressive performance, tensile/flexural properties, and durability; and showcasing successful applications.

# 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:

作为一篇科技论文，该文章并没有明显的偏见或宣传内容。然而，它可能存在一些片面报道和缺失的考虑点。

首先，文章强调了UHPC的优点，如其高强度、耐久性和可持续性等。但是，它没有提到UHPC的成本问题，这可能是限制其广泛应用的一个重要因素。

其次，在讨论UHPC的挑战时，文章提到了低工作性、自收缩、不足的抗弯/拉性能和混凝土开裂后不可预测的耐久性等问题。然而，文章没有探讨这些问题对实际应用造成的影响，并且也没有提供解决这些问题的具体方法。

此外，在介绍UHPC发展历程时，文章只涉及了技术方面的进步，并未考虑社会、经济和环境因素对UHPC发展的影响。例如，随着全球气候变化和资源短缺等问题日益突出，人们对建筑材料可持续性和环保性能要求越来越高。因此，在评估UHPC作为建筑材料时，需要考虑其在生命周期内对环境和社会造成的影响。

最后，在介绍成功应用案例时，文章只列举了少数几个案例，并未全面评估UHPC在各种结构应用中的适用性和局限性。此外，在介绍这些案例时也没有提供详细数据或证据来支持所述主张。

总之，尽管该文章提供了有关UHPC技术方面进展的有价值信息，但它也存在一些局限性和缺失。为了更全面地评估UHPC作为建筑材料的潜力和局限性，需要进行更深入、全面、客观和系统地研究。

# Topics for further research:

* Cost of UHPC
* Impact of UHPC challenges on practical applications
* Social
* economic
* and environmental factors affecting UHPC development
* Sustainability and environmental impact of UHPC
* Applicability and limitations of UHPC in various structural applications
* Lack of detailed data and evidence supporting UHPC claims in successful applications

# Report location:

<https://www.fullpicture.app/item/b73deb865baae06f89cef5e8ef807a29>