# Article information:

3D Printing of Continuous Fiber Reinforced Polymer Composites: Development, Application, and Prospective - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S277266572200006X>

# Article summary:

1. 3D printing of continuous fiber reinforced polymer composites (CFRPC) allows for the design and fabrication of complicated composite structures with high performance and low cost.

2. The raw materials used in 3D printing of CFRPCs include various types of fibers, such as carbon, glass, Kevlar, and natural fibers, as well as thermoplastic polymers like PLA, ABS, nylon, and PEEK.

3. In-situ impregnation methods and pre-impregnated composite filaments are two common approaches to 3D printing of CFRPCs, with various equipment and processes available for each method.

# 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 "3D Printing of Continuous Fiber Reinforced Polymer Composites: Development, Application, and Prospective" provides an overview of the state-of-the-art developments in 3D printing of continuous fiber reinforced polymer composites (CFRPCs). The article highlights the potential benefits of using CFRPCs in various industries due to their light weight, high specific strength and modulus. The authors also discuss the challenges associated with using advanced composites, such as high cost and limited recycling options.

The article provides a comprehensive review of the raw materials used in 3D printing of CFRPCs, including fibers and matrix materials. The authors discuss the properties of different types of fibers used for 3D printing, such as carbon fiber, glass fiber, Kevlar fiber, natural fiber like jute, and ultra-high molecular weight polyethylene (UHMWPE) fiber. They also provide information on different types of matrix materials used for 3D printing, including thermosetting polymers and thermoplastic polymers.

The article discusses various 3D printing processes and equipment used for CFRPCs. The authors highlight two main methods: in-situ material extrusion with dry carbon fiber and polymer matrix; and 3D printing of pre-impregnation composite filament. They provide examples of how these methods have been used to produce CFRPCs with varying degrees of success.

Overall, the article provides a useful overview of the current state-of-the-art developments in 3D printing of CFRPCs. However, there are some limitations to this review. For example, the authors do not provide a detailed analysis or comparison between different types of fibers or matrix materials used for 3D printing. Additionally, they do not explore potential risks associated with using CFRPCs or consider counterarguments against their use.

Furthermore, while the article does provide some information on challenges associated with using advanced composites like CFRPCs (such as high cost), it does not fully explore potential solutions to these challenges or address any potential biases towards promoting the use of these materials.

In conclusion, while this article provides a useful overview of developments in 3D printing of CFRPCs, readers should be aware that it may have some limitations in terms of providing a balanced perspective on this topic.

# Topics for further research:

* Comparison of different types of fibers and matrix materials used for 3D printing of CFRPCs
* Risks associated with using CFRPCs in various industries
* Counterarguments against the use of CFRPCs
* Solutions to challenges associated with using advanced composites like CFRPCs
* Environmental impact of using CFRPCs and potential recycling options
* Future developments and advancements in 3D printing of CFRPCs

# Report location:

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