# Article information:

Digital light 3D printing of a polymer composite featuring robustness, self-healing, recyclability and tailorable mechanical properties - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S2214860422007321?via%3Dihub>

# Article summary:

1. Researchers have developed a self-healable polymer composite for Digital Light Processing 3D Printing that combines two monomers with distinct mechanical characteristics, resulting in a desirable and superior combination of properties among 3D printable self-healing polymers.

2. The printed objects are endowed with multi-materials assembly and recycling capabilities, allowing robotic components to be easily reassembled or recycled after failure. Mechanical properties and deformation behaviour of printed composites and lattices can be tuned significantly to suit various practical applications by altering formulation.

3. Lattice structures with three different architectures were printed and tested in compression: honeycomb, re-entrant, and chiral. They can regain their structural integrity and stiffness after damage, which is of great value for robotic 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:

The article titled "Digital light 3D printing of a polymer composite featuring robustness, self-healing, recyclability and tailorable mechanical properties" discusses the development of a new self-healable polymer composite for Digital Light Processing 3D Printing. The authors claim that this composite offers a desirable and superior combination of properties among 3D printable self-healing polymers, with tensile strength and elastic modulus up to 49 MPa and 810 MPa, respectively. They also state that printed objects are endowed with multi-materials assembly and recycling capabilities, allowing robotic components to be easily reassembled or recycled after failure.

While the article provides detailed information about the materials used in the composite and the printing process, it lacks some important details regarding the potential risks associated with using such materials. For example, there is no discussion about the toxicity of any of the chemicals used in the composite or their potential impact on human health or the environment.

Additionally, while the authors claim that their composite offers superior mechanical properties compared to other self-healing polymers, they do not provide sufficient evidence to support this claim. The article only presents data on tensile strength and elastic modulus but does not compare these values to those of other similar materials.

Furthermore, while the authors mention that lattice structures with three different architectures were printed and tested in compression: honeycomb, re-entrant, and chiral; they do not provide any information about how these structures performed under different loading conditions or how they compare to other lattice structures made from different materials.

Overall, while this article provides interesting insights into a new self-healable polymer composite for Digital Light Processing 3D Printing with potentially useful applications in engineering fields such as aerospace and robotics; it lacks some important details regarding potential risks associated with using such materials and does not provide sufficient evidence to support some of its claims.

# Topics for further research:

* Toxicity of chemicals used in self-healable polymer composites
* Environmental impact of Digital Light Processing 3D Printing
* Comparison of mechanical properties of self-healing polymers
* Performance of lattice structures under different loading conditions
* Comparison of lattice structures made from different materials
* Safety considerations for using self-healable polymer composites in engineering applications

# Report location:

<https://www.fullpicture.app/item/7ebc9039742dac8539d5f2f7346b7cd8>