# Article information:

High-speed laser writing of structural colors for full-color inkless printing | Nature Communications  
<https://www.nature.com/articles/s41467-023-36275-9>

# Article summary:

1. Conventional pigments used in ink and toner cartridges are toxic and have poor long-term stability, leading to a demand for structural color-based ink-free printers.

2. Laser coloring techniques, including plasmonic colors, laser-induced periodic surface structures (LIPSS), and laser-induced oxide layers, have limitations such as narrow gamut and viewing angle dependence.

3. A laser-coloring scheme using TiAlN-TiN hybrid films as "inorganic ink" has been developed, achieving wide gamut, durability, large-scale production, and viewing angle insensitivity.

# 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 discusses the development of ink-free printers that rely on structural colors for printing. The conventional pigments used in inkjet or laser printers are toxic and environmentally unfriendly, and their long-term stability is generally poor. Structural colors, arising from light scattering, absorption, diffraction, or interference by micro/nanostructures, are promising to achieve pigments-free colorful printing.

The article provides a detailed overview of various techniques for surface coloring using lasers. However, it fails to provide a balanced view of the advantages and disadvantages of each technique. For example, while plasmonic colors exhibit viewing angle-independent properties, they face problems with narrow gamut and low stability. Laser-induced oxide layers exhibit high stability and productivity but have a narrow gamut and are dependent on viewing angles.

The article presents a new laser-coloring scheme that claims to solve the problems faced by other techniques. Structural colors with wide gamut, durability, large-scale production capabilities, and viewing angle-insensitivity are achieved via laser-induced oxidation on TiAlN-TiN hybrid films. However, the article does not provide sufficient evidence to support these claims.

The potential biases in the article include its focus on promoting the new laser-coloring scheme without providing enough evidence to support its claims. The article also fails to explore counterarguments or present both sides equally.

Overall, while the article provides an interesting overview of various techniques for surface coloring using lasers, it lacks balance in presenting the advantages and disadvantages of each technique and fails to provide sufficient evidence to support its claims about the new laser-coloring scheme.

# Topics for further research:

* Pros and cons of plasmonic colors for printing
* Stability issues with laser-induced oxide layers for surface coloring
* Viewing angle dependence in laser-induced surface coloring techniques
* Comparison of different methods for achieving structural colors
* Limitations of conventional inkjet and laser printers for printing
* Environmental impact of toxic pigments used in inkjet and laser printers

# Report location:

<https://www.fullpicture.app/item/dc27a58ccb980c5fd93f701f41629cda>