PURDUE INNOVATES | Office of Technology Commercialization

Multi-functional Color Printing

Laser-written, non-fading plasmonic color on varied substrates for high-resolution art, anti-counterfeit, and optical data uses.

Researchers at Purdue University have developed a medium and method for plasmonic color printing with a lossy resonator that has a wide color range and adjustable angular/polarization sensitivities. The overall structure thickness is around 300 nanometers and could be fabricated on any substrate acting as a good heat sink. An expanded palette of angular-dependent colors is efficiently generated through laser modification of the medium under variable illumination wavelengths. This approach to non-fading color printing reduces the need for artificial harmful dyes.

Technology Validation: The researchers successfully printed samples of plasmonic color images with an area of 10 sq. mm and a resolution comparable to the conventional 300 dots-per-inch color prints. The samples change their reflected color throughout the entire visible spectrum depending on the viewing angle and the parameters of the laser photomodification.

Advantages:

- Lithography-free

- Environmentally-friendly

- Highly-controllable

Applications:

- Fine arts rendering

- Anti-counterfeiting

- Optical data storage

Publications:

https://arxiv.org/abs/2306.15496

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Further information

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