

## About the Technology

Conventional dye-based prints lack functionalities such as stereoscopic 3D images and polarisation-sensitivity which enable multiple images to be encoded on the same print-area. IMRE researchers developed a technology using aluminum as the plasmonic material, to achieve a full colour range for high-resolution colour printing with enhanced durability and reduced material costs.

*An example of an image of a reproduced Monet masterpiece which measured a mere 200 by 250 micrometres, achieved using the printing technology, small enough to be printed onto a strand of human hair.*



## Key Features

- Dye-free and fade-free printing for ultra high-resolution colour prints of 62,500 dpi
- Print features of ~50 times smaller than its ink-based counterparts
- Broad spectrum of colours from a single metal evaporation step on a nanostructured substrate
- No colour bleeding
- Colour elements that can be engineered to enable encoding of two sets of information, exhibiting one of two colours depending on the polarisation of the light used to illuminate it

## Potential Applications

- Anti-counterfeiting and security features
- Product branding and authentication

## Collaboration Opportunities

- Products which require hard-to-replicate security tags
- Scale-up approaches which can print nano-scale pixels to large (>1 cm<sup>2</sup>) areas

Reference:

Tan SJ, Zhang L, Zhu D, Goh XM, Wang YM, Kumar K, et al. Plasmonic Color Palettes for Photorealistic Printing with Aluminum Nanostructures. *Nano Letters*. 2014;14(7):4023-9.



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