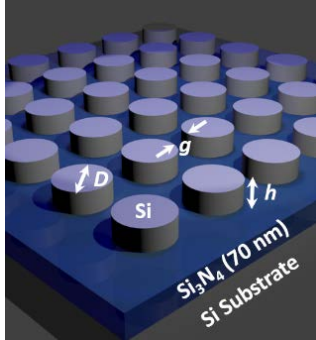
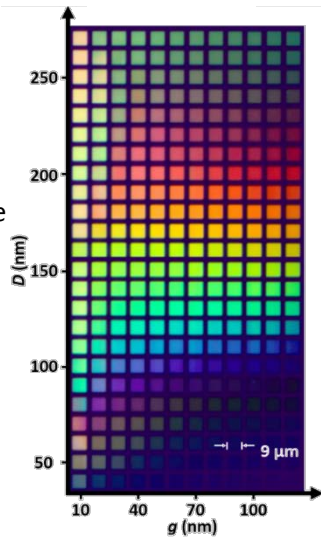


About the Technology

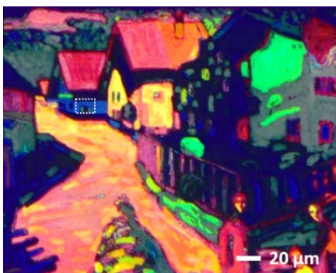


Schematic of the silicon colour pixel

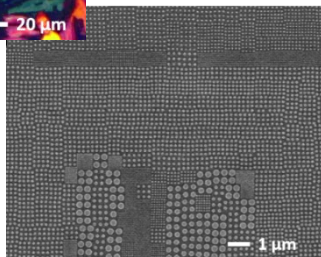
Silicon colour palette



(a)



(b)



(a) Optical microscope image and (b) corresponding SEM image of the printed art piece "Murnau Street with Women" by Vasily Kandinsky.

Reference:

Dong ZG, Ho JF, Yu YF, Fu YH, Paniagua-Dominguez R, Wang SH, et al. Printing Beyond sRGB Color Gamut by Mimicking Silicon Nanostructures in Free-Space. *Nano Letters*. 2017;17(12):7620-8.

IMRE researchers developed a technology to achieve vivid high-resolution colour printing beyond the optical diffraction limit.

Key Features

- Ultra-high resolution all-silicon/ silicon-based colour filters beyond sRGB
- Compatible with metal-oxide-semiconductor fabrication process
- Enables the design and placement of dielectric nanostructures onto anti-reflection substrates, which mimics the placement of nanostructures in free-space
- Able to overcome the substrate effects

Potential Applications

- High-resolution anti-counterfeiting bar codes
- Could extend the application to other dielectric materials, such as titanium dioxide, plastic, glass and diamonds, e.g., nanostructured diamonds demonstrate vivid colors, which can be used to personalise jewellery by printing names, signatures, logos and even photos onto the diamond substrate.
- Can be used as standard calibration samples for compact micro-spectroscopy

Collaboration Opportunities

- Integration with photodetectors



For more information, please contact:
industry@imre.a-star.edu.sg



IMRE website: <https://www.a-star.edu.sg/imre/>
A*STAR website: <https://www.a-star.edu.sg/>