

# Conformal Flexible Dielectric Metasurfaces

## Scientific Achievement

We demonstrate an approach for decoupling optical properties of objects from their geometrical form using thin and flexible dielectric metasurfaces that conform to an object's surface and change its optical properties.

## Significance and Impact

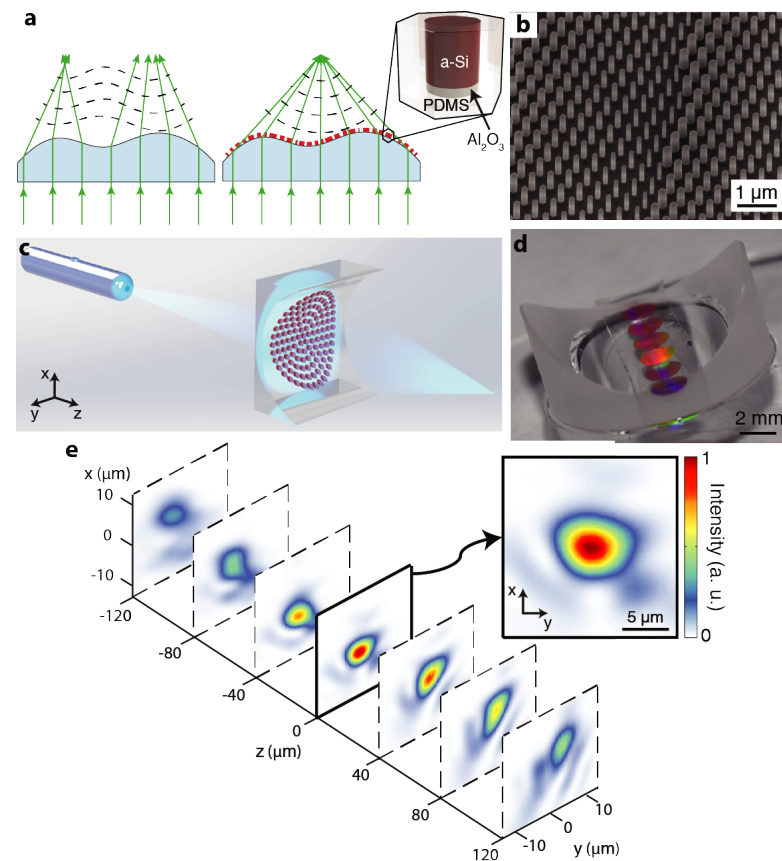
The conformal metasurface concept is highly versatile for developing arbitrarily shaped multifunctional optical devices.

## Research Details

- We developed conformal optical metasurfaces for decoupling geometrical form and optical function using an amorphous silicon nano-post embedded in PDMS as the metasurface building block.
- A fast and intuitive design procedure and a high-yield fabrication process were demonstrated.

S. M. Kamali, A. Arbabi, E. Arbabi, Y. Horie, and A. Faraon, "Decoupling optical function and geometrical form using conformal flexible dielectric metasurfaces" accepted in *Nature Communications*; *arXiv:1511.04824*, (2015);

Work was performed at Caltech.



**a**, The concept. **b**, SEM of the fabricated metasurface. **c**, A concave cylinder wrapped by a flexible metasurface behave as aspherical lens. **d**, A flexible metasurface conformed a concave cylinder. **e**, Measured optical intensity profiles.