Editorial Summary

Metamaterials: Tuning into long-wavelength light

Researchers in the United States have created an artificial material with optical properties that can be changed using an electrical voltage. Metamaterials consist of repeating arrays of subwavelength elements that are designed to interact with light in ways that go beyond the abilities of naturally occurring materials. Xin Zhang and Richard Averitt at Boston University and UC San Diego and their colleagues have fabricated such a structure that can manipulate long-wavelength light called terahertz radiation. The metamaterial comprises two arrays of incomplete rings — one on a silicon nitride thin film and the other on a movable frame. The team could shift the frame using a microelectromechanical system that was integrated into the substrate. This relative motion changed the intensity and phase of the terahertz radiation being transmitted through the metamaterial.

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