458. Title:Optical metamaterials seek real-world applications
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Source title:Laser Focus World
Volume:47
Issue:5
Issue date:May 2011
Publication year:2011
Pages:61-65
Language:English
Document type:Journal article (JA)
Abstract:Significant developments in the field of optical metamaterials have created potential new applications for these materials. Some of these applications include broadband polarizing filters, near-perfect absorption, and optics for the terahertz band. Metamaterials are assemblies of subwavelength structural elements designed to collectively interact with electromagnetic waves. The first metamaterial experiments have been conducted in the field of the microwave band and developers are working on metamaterial devices including phased array antennas,. The high absorption of metamaterials can be an attraction in the terahertz band where natural materials generally have low absorption. A review paper has catalogued many other terahertz metamaterial demonstrations, including quarter-wave plates, switching and modulation, and tuning of resonance behavior by moving structural elements.