110
Accession number:20121814974659
Title:Ferroelectric nanotubes for THz emitters, energy harvesters
Authors:O'shea, Paul (0)
Corresponding author:O'shea, P.
Source title:Electronic Products
Abbreviated source title:Electron. Prod.
Volume:54
Issue:4
Issue date:April 2012
Publication year:2012
Language:English
ISSN:00134953
CODEN:ELPOA2
Document type:Journal article (JA)
Publisher:Hearst Business Communications, 50 Charles Lindbergh Blvd., Suite 100, Uniondale, NY 11553, United States
Abstract:Researchers at Georgia Institute of Technology have developed a soft template infiltration technique for fabricating free-standing piezoelectrically active ferroelectric nanotubes and other nanostructures from lead zirconate titanate (PZT). This is important because PZT has a large piezoelectric response. The technique allows fabrication of ferroelectric nanostructures with user-defined shapes, location and pattern variation across the same substrate. For example, the piezoelectric effect could permit fabrication of 'nano-muscle' tubes that would act as tiny pumps when an electric field is applied to them. The fields could also be used to tune the properties of photonic crystals, or to create structures whose size can be altered slightly to absorb electromagnetic energy of different wavelengths.
Abstract type:(Edited Abstract)
Main heading:Ferroelectricity
Controlled terms:Electric fields - Electromagnetic waves - Nanotubes - Photonic crystals - Piezoelectricity - Semiconducting lead compounds
Uncontrolled terms:Energy Harvester - Ferroelectric nanostructures - Ferroelectric nanotubes - Georgia Institute of Technology - Infiltration techniques - Lead zirconate titanate - Pattern variation - Piezoelectric response - PZT - Soft template - THz emitters
Classification code:701.1 Electricity: Basic Concepts and Phenomena - 711 Electromagnetic Waves - 712.1.2 Compound Semiconducting Materials - 761 Nanotechnology - 933.1 Crystalline Solids
Database:Compendex