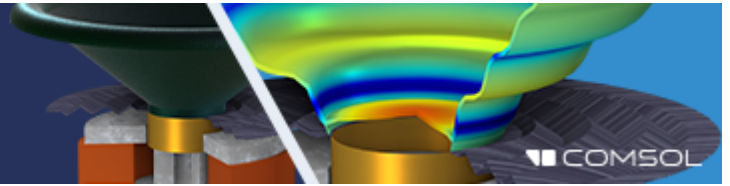


Take the Lead in Acoustics

» Learn more about COMSOL Multiphysics®



The Journal of the Acoustical Society of America

[HOME](#)[BROWSE](#)[MORE ▼](#)

[Home](#) > [The Journal of the Acoustical Society of America](#) > [Volume 151, Issue 4](#) > [10.1121/10.0011023](#)

[< PREV](#)[NEXT >](#)

Full

Published Online: 10 May 2022

Multi-material stimuli-responsive hydrogels with optically induced actuation

The Journal of the Acoustical Society of America **151**, A179 (2022);

<https://doi.org/10.1121/10.0011023>

Haley Tholen

- The Penn State Univ., 336 Reber Bldg., University Park, PA 16802, hmt5321@psu.edu

Ryan L. Harne

- The Penn State Univ., State College, PA

more...



New Contributors



Topics ▾

Meeting abstract. No PDF available.

ABSTRACT

A vision for soft, autonomous materials entails synthesis of multiple senses in multifunctional materials where material response requires sensitivity to external stimuli. Stimuli-responsive hydrogels are of particular interest for optically induced mechanical response due to the ability to transform external stimuli into large, reversible shape change. Specifically, temperature-responsive hydrogels are broadly used and can be designed to achieve deformation through the photothermal effect as a result of surface plasmonic resonance of gold nanoparticles. Here, a multi-material stimuli-responsive hydrogel network with embedded gold nanoparticles is demonstrated in a unit cell pattern with anisotropic swelling behavior in response to visible light. Reversible, anisotropic swelling leads to bending motion that contributes to the development of soft, autonomous materials.

© 2022 Acoustical Society of America.



Resources

AUTHOR

LIBRARIAN

ADVERTISER

General Information

ABOUT

CONTACT

HELP

PRIVACY POLICY

TERMS OF USE

FOLLOW AIP PUBLISHING:



Website © 2022 AIP Publishing LLC.

Article copyright remains as
specified within the article.

Scitation

