

Biological Force-Responsive Chromogenicity of Polymeric Hydrogels

Tech ID: 34565 / UC Case 2026-626-0

BRIEF DESCRIPTION

A mechanically adaptive hydrogel that changes color in response to force exerted by living cells, enabling force sensing through optical signals.

FULL DESCRIPTION

This technology features polymeric hydrogels embedded with mechanically sensitive molecular bonds that produce visible color and fluorescence changes when contractile cells apply force. Peptide linkers interface the living cells with the abiotic polymer network, facilitating force transmission that induces molecular rearrangements within the hydrogel. Compatible with 3D light-based printing methods, this platform offers a user-friendly, high-throughput approach to screening contractile cell forces without requiring complex cleanroom fabrication or intricate data analysis.

SUGGESTED USES

- » Drug screening platforms for cardiac and muscular diseases.
- » Mechanobiology research tools to study cell force dynamics.
- » Biomedical diagnostics monitoring muscle cell health and function.
- » Bioengineered tissue evaluation and regenerative medicine.
- » Development of wearable and implantable force-sensing biomaterials.

ADVANTAGES

- » Real-time, colorimetric readout of cellular mechanical forces.
- » High sensitivity to contractile cell activity such as cardiac beating.
- » Integration with 3D light-based printing for scalable fabrication.
- » Eliminates need for complex cleanroom processing or soft lithography.
- » Simple optical detection reduces dependence on complicated data analysis.

PATENT STATUS

Patent Pending

CONTACT

Ben Chu
ben.chu@uci.edu
tel: .



OTHER INFORMATION

CATEGORIZED AS

- » **Materials & Chemicals**
 - » Biological
 - » Chemicals
 - » Polymers
- » **Medical**
 - » Devices
 - » Diagnostics
 - » Disease: Cardiovascular and Circulatory System
 - » Disease: Musculoskeletal Disorders
 - » Research Tools

RELATED CASES

UCI Beall
Applied Innovation

5270 California Avenue / Irvine, CA
92697-7700 / Tel: 949.824.2683



© 2026, The Regents of the University of
California
[Terms of use](#)
[Privacy Notice](#)