



## Frequency-Based Filtering of Mechanical Actuation

Tech ID: 28675 / UC Case 2012-086-0

### BRIEF DESCRIPTION

Researchers at the University of California, Santa Barbara have created a device that delivers pressure or displacement to specific locations based on the frequency of the actuator used as input.

### BACKGROUND

Fluidic devices are used for a variety of applications. However, controlling flow in these devices, such as in ones exclusively using active valve structures such as MEMS structures, can be extremely expensive, decrease reliability, or prevent objectives such as disposability or rapid replacement.

### DESCRIPTION

Researchers at the University of California, Santa Barbara have created a device that delivers pressure or displacement to specific locations based on the frequency of the actuator used as input. The device serves as a mechanical filter where excitation applied at one frequency is delivered to a specific output location with a magnitude that depends on the excitation frequency. By modulating the dimensions of the device's fluidic network, and the mechanical response of the deformable features serving as the input and outputs, one can construct different types of filters: low-pass, band-pass, or high pass. There are many advantages to using a fluidic network for filtering and actuation. The filtering/actuation system can be re-used with multiple chips and the frequency-specific response of the actuating system can be designed to generate large displacement amplitudes that can be translated onto the chip.

### ADVANTAGES

- ▶ Frequency response can be modulated without altering channels of the microfluidic chip
- ▶ A single input actuator can selectively control flow
- ▶ Filtering/actuation system can be re-used with multiple chips

### APPLICATIONS

- ▶ Chemical analysis or assay

### PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,987,576	06/05/2018	2012-086
Patent Cooperation Treaty	Published Application	WO2014/093360	06/19/2014	2012-086

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### OTHER INFORMATION

#### KEYWORDS

indansens, indmicroelec

#### CATEGORIZED AS

- ▶ **Engineering**
- ▶ Engineering
- ▶ Other

#### RELATED CASES

2012-086-0

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ [Devices and Methods for 3D Printing of Highly Ordered Composite Materials](#)

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