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## Flexible Wearable Sensors for Non-invasive Continuous Blood Pressure Monitoring

Tech ID: 30156 / UC Case 2019-366-0

### BRIEF DESCRIPTION

Researchers at UCI have developed a wearable, wristband sensor that can detect the pressure of the body's pulse from the surface of the skin at the wrist. They can correlate this measurement to blood pressure and subsequently use this device for long-term continuous monitoring.

### SUGGESTED USES

Continuous blood pressure monitoring for personal or medical use

### FEATURES/BENEFITS

- Non-invasive
- Small, cuffless wearable device for continuous monitoring
- Material used for sensor is flexible and conforms well to the skin
- Sensor is very sensitive and robust

### TECHNOLOGY DESCRIPTION

Blood pressure is a standard physiological signal that is measured at every doctor's visit and is used to monitor blood circulation in the body. Common non-invasive methods measure blood pressure using inflatable arm or finger cuffs, however, the reduced comfort of these devices make them unsuitable for long-term and continuous monitoring.

Wearable sensors have offered people new avenues for monitoring physiological signals such as heart rate or temperature. Specifically, mechanical pressure sensors have been used to sense joint, muscle and even pulsatile movement in the body. These sensors can detect pulses from the radial artery at the wrist, making it potentially useful for determining other vital signs such as blood pressure. However, the current use of rigid materials and limited robustness of these sensors limit their flexibility, measurement sensitivity, and long-term capabilities.

Researchers at UCI have developed a flexible mechanical pressure sensor that can be worn as a wristband to monitor blood pressure. The sensor is designed to read the pressure of the radial artery pulse. This pressure has been found to be well correlated to the arterial blood pressure. The sensor materials allow it to conform well to the skin and withstand a range of stretch and strain. Overall, the wearable sensor is durable, sensitive, and flexible enough to be used for long-term, continuous monitoring of blood pressure at home or in the doctor's office.

### STATE OF DEVELOPMENT

### CONTACT

Alvin Viray  
aviray@uci.edu  
tel: 949-824-3104.



### INVENTORS

» Khine, Michelle

### OTHER INFORMATION

### CATEGORIZED AS

- » **Materials & Chemicals**
- » Biological
- » **Medical**
- » Devices
- » **Sensors & Instrumentation**
- » Biosensors
- » Medical

### RELATED CASES

2019-366-0

Working prototype of sensor has been developed. Sensitivity of measurements, robustness, response time, material characterization has been performed. Real-time monitoring with the sensor has been compared and correlated well with commercial blood pressure monitoring device (ClearSight, Edwards LifeSciences).

## PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20200069193	03/05/2020	2019-366

### ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Micron-resolution malleable strain and pressure sensor
- ▶ Intra-Beat Biomarker For Accurate Blood Pressure Estimations

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Applied Innovation

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



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