

# Development of a Device for Non-Invasive Continuous Blood Pressure Monitoring

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## Vision

In the oncology field continuous blood pressure monitoring of patients is extremely important. However, the catheters currently in use are invasive and raise significant safety concerns, including bleeding, hematoma, infection, thrombosis, nerve injury, arterial damage, and distal ischemia or necrosis. As a result, alternative methods are in strong demand. This seed technology, which applies organic semiconductor sensor technology to bio-monitoring, enables continuous, highly accurate, and non-invasive blood pressure monitoring. Moreover, its cost-effectiveness allows for broad market availability, providing a solution to the limitations of current catheter-based methods.

## Marketability

Sales in 2030 are projected to reach 200 million USD, assuming initial application for cancer patients. This estimate is based on a report that there will be 10 million cancer surgeries worldwide in 2030. Of these, we assume that 20% will require continuous monitoring. By 2032, we aim to capture 10% of the disposable blood pressure transducer market, targeting sales of 1.39 billion USD. Regarding trends in the non-invasive monitoring market, although approaches using optical sensors and fingertip cuffs are being developed, they still face challenges in terms of continuity, measurement accuracy, and cost.

## Innovation

World's First Device Utilizing Organic Semiconductors with a Novel Measurement Mechanism. Developed an ultrathin organic semiconductor crystal with a thickness of only 1 nm. Enables unprecedented softness and conformity to skin strain, allowing for non-invasive measurements. Successfully measured minute skin strain above the radial artery. Demonstrated sufficient sensitivity to capture pulse waves in real time, which are proportional to blood pressure waveforms.

## Partnering

### 【 Expected partners 】

Medical institute · Electronics/Digital · Machinery/Device · Medical/Diagnosis/Research Devices · Venture capitals

### 【 Expectation 】

Collaboration in Manufacturing, Sales Partnerships, and Funding Support

## Research Outline

Key Words: #DiagnosticsAndTesting, #MedicalDevicesAndInstruments, #ContinuousBloodPressureMonitoring, #OrganicSemiconductors

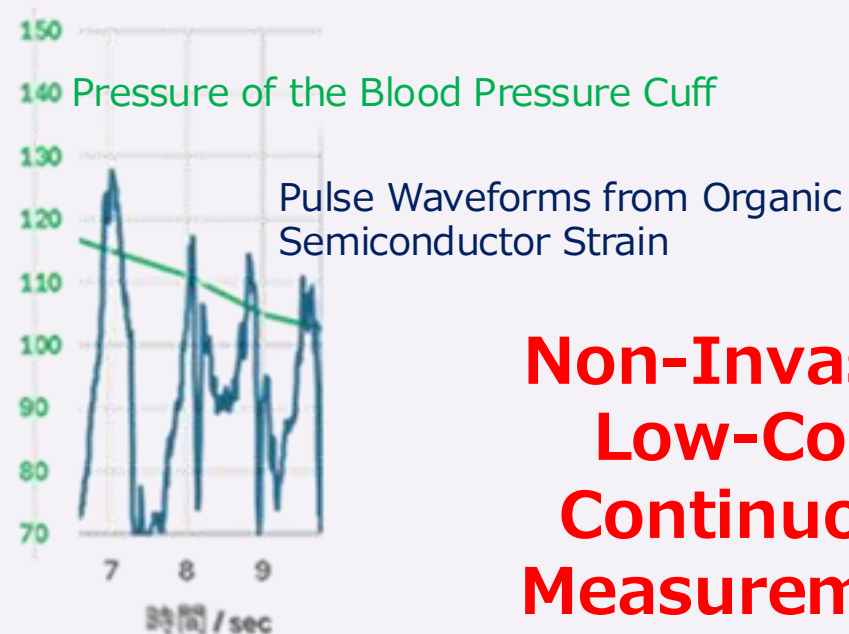
## Proportional Relationship Between Blood Pressure Values and Organic Semiconductor Strain Waveforms

Waveforms Obtained by Attaching a Film Sensor to the Radial Artery During Cuff-Based Blood Pressure Measurement

Conventional Continuous Blood Pressure Monitoring Using Catheters



**Safety concerns due to invasiveness**



**Non-Invasive  
Low-Cost  
Continuous  
Measurement  
High Sensitivity**

1) Nature Phys. 2019, Nature Materials 2021, Nature 2023