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Thermoelectric sensor for detecting viruses like SARS-CoV-2

This thermoelectric sensor provides fast, precise, and scalable viral detection and diagnostics through detecting temperature changes in pathogen reactions.

Purdue University researchers have ideated a thermoelectric sensor which selectively identifies exothermic viral pathogen reactions utilizing the Seebeck effect. The sensor offers fast and precise readouts through detecting temperature changes through a voltage readout after interactions of pathogen antigen/antibody. Silicon material is used as the sensor's base material facilitating scale up through standard device fabrication processes. Modification of this technology to pathogen RNA/complementary DNA hybridization amplify the voltage change in patients with low viral load. This sensor can be used for a wide range of diseases with high epidemic potential increasing the utility.

Advantages:

-Fast and precise diagnostics

-Label free viral detection

-No RNA preparation needed

-Easy scale-up manufacturing

Potential Applications:

-COVID-19 diagnostic

-Epidemic testing

TRL: 3

Intellectual Property:

Technology ID
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Category
Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics
Semiconductors/Fabrication & Process Technologies
Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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