



## DEPARTMENT OF HEALTH AND HUMAN SERVICES

### National Institutes of Health

#### **Government Owned Inventions Available for Licensing or Collaboration: Single Source-Detector Separation Approach to Calculate Tissue Oxygen Saturation**

**AGENCY:** National Institutes of Health, HHS.

**ACTION:** Notice.

**SUMMARY:** The National Institute of Child Health and Human Development (NICHD), an institute of the National Institutes of Health (NIH), Department of Health and Human Services (HHS), is giving notice of the licensing or collaboration opportunities for the inventions listed below, which are owned by an agency of the U.S. Government and are available for licensing and collaboration to achieve expeditious commercialization of results of federally-funded research and development.

**FOR FURTHER INFORMATION CONTACT:** Inquiries related to these licensing or collaboration opportunities should be directed to: Zarpheen Jinnah, Ph.D., Technology Transfer Manager, NCI, Technology Transfer Center, email: [zarpheen.jinnah@nih.gov](mailto:zarpheen.jinnah@nih.gov) or phone: 240-620-0586.

**SUPPLEMENTARY INFORMATION:** Tissue oxygen saturation (StO<sub>2</sub>) is an important parameter to assess oxygen delivery and uptake. Hypoxia, a term used to indicate inadequate StO<sub>2</sub>, is often seen in patients with cardiac problems, respiratory infections or pulmonary diseases. Prolonged hypoxia can damage vital organs such as the brain, lungs, and heart and can be fatal. Currently available tissue oximeters to monitor StO<sub>2</sub> are expensive and cumbersome. NICHD has developed a novel method, which uses a single source-detector separation to calculate StO<sub>2</sub>. With this technique, a simple tissue oximeter can be made with just a LED and a photodetector, which enables the development of a miniaturized device. As a result, it can be used independently or implemented on existing technologies to measure StO<sub>2</sub> without any

hardware modifications. It can be applied in wearable devices, implantable medicines or endoscopies to measure tissue oxygenation in different tissues such as muscle, brain, spinal cord, internal organs, fetus and placenta.

This Notice is in accordance with 35 U.S.C. 209 and 37 CFR part 404.

*NIH Reference Number:* E-037-2023-0.

*Product Type:* Device.

*Therapeutic Area(s):* Respiratory, Neurology or Cardiac.

*Potential Commercial Applications:*

- Miniaturized tissue oximeter for implantation or endoscopy.
- Measure tissue oxygen saturation.
- Multilayer tissue oximeter.

*Competitive Advantages:*

- Simpler and more compact as it only requires a single light source such as LED and a single photodetector such as a photodetector to build a tissue oximeter.
- Multilayer measurement.
- Implementation with existing technologies without any hardware modifications.

*Publication:* Nguyen, T., et al. Application of the Single Source—Detector Separation Algorithm in Wearable Neuroimaging Devices: A Step toward Miniaturized Biosensor for Hypoxia Detection. (*PMID 38671806*).

*Patent Status:* PCT Application PCT/US2023/085725 filed on December 22, 2023.

*Development Stage:* Clinical Phase I.

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