

# Brite Lite Frontal mini

Exploring the little ones' prefrontal brain activation –made easy.



Measures oxy-, deoxy- and total hemoglobin concentration changes in the prefrontal cortex



Truly wearable and specially designed for pediatric studies and developmental research



Ready to wear with optimized flexibility, designed for testing in common toddler research settings



Hyperscanning across all ages made easy with the Brite family

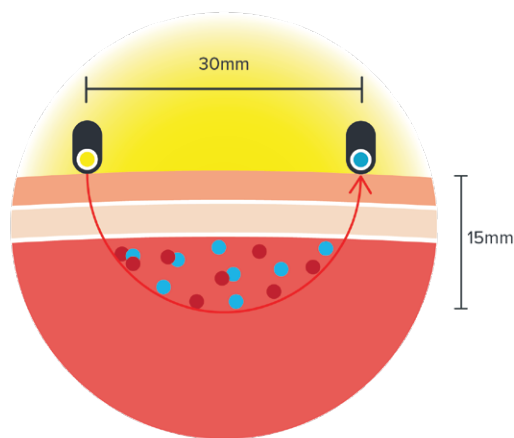
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# Near Infrared Spectroscopy



NIRS, the technique which the Brite Lite Frontal mini is based on, relies mainly on two characteristics of human tissue. The first is the relative transparency of human tissue for light in the NIR range and secondly, to the oxygenation dependent absorbance of the hemoglobin. Based on these principles, the Brite Lite Frontal mini makes it possible to monitor brain activity of your subject:

- Non-invasively
- Wirelessly
- Continuously recording and feedback
- Affordably and no disposables needed
- In easy setup for any environment, both indoors or outdoors

## WHAT CAN NIRS DO FOR ME?

- NIRS is used in many fields of research. NIRS enables measuring the relative changes in the concentration of oxyhemoglobin ( $O_2Hb$ ), deoxyhemoglobin ( $HHb$ ) and total hemoglobin ( $tHb$ ) in biological tissue.
- Assuming the concentration of hemoglobin in blood is constant (during your measurement), the  $tHb$  can be used as a marker for blood volume.

# Exploring a Brite mind



## OPTIMAL fNIRS SYSTEM FOR MEASURING PREFRONTAL BRAIN ACTIVATION OF LITTLE EXPLORERS

The Brite Lite Frontal mini is the successor of the OctaMon mini, delivering enhanced capabilities to measure oxy-, deoxy-, and total hemoglobin in the prefrontal areas of young children using 8 fNIRS channels. Designed specifically for pediatric research, it provides precise and reliable measurements of prefrontal brain activation. The optode template is tailored for precise forehead coverage, ensuring accurate readings. Compact and ready to wear, the device allows researchers to quickly and easily set it up on each participant and begin the data collection.

Ideal for cognitive studies, the Brite Lite Frontal mini is well-suited for brain development research in psychology, behavioral sciences, neuroscience, and related fields.

## POWERFUL AS THE BRITE

As part of the Brite family, the Brite Lite Frontal mini incorporates the same powerful features found in the full Brite system. These include multi-power gain control, live and offline data measurement, automatic data backup, and more—all designed to deliver high-quality, reliable results. Additionally, the system comes with two data acquisition software options: OxySoft, renowned for its comprehensive capabilities in recording, managing, and analyzing (f)NIRS data, and Brite Connect, a modern platform that simplifies fNIRS data recording with its user-friendly interface.

## LIGHTWEIGHT & COMFORTABLE FOR KIDS ON THE GO

The Brite Lite Frontal mini includes a dedicated mini headband, designed to fit snugly on the little ones' forehead for maximum comfort. The newly developed BriteBelt allows you to securely mount the control unit, enhancing the system's lightweight design while providing flexibility for active toddlers to move freely during data collection. Weighing just 222 grams in total (including the headband and optode holders), this device combines lightweight and wearability with powerful performance.





## Applications

The Brite Lite Frontal mini can be used to measure changes in oxy- and deoxyhemoglobin concentration levels in the brain. As it only weighs 222 grams(!) and is a portable fNIRS device, toddlers are able to move freely while wearing the device.

The Brite Lite Frontal mini is the ideal device for pediatric research. Among the many application areas to choose from, the Brite Lite Frontal mini is particularly recommended for:

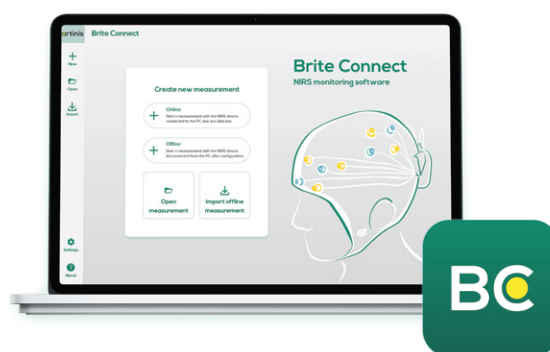
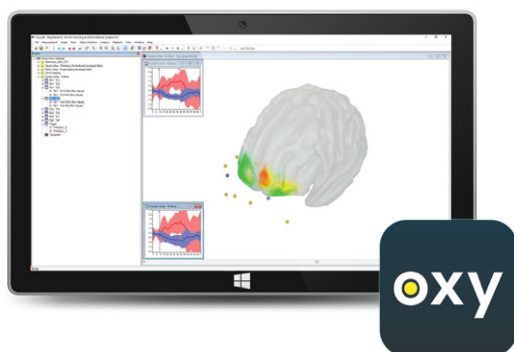
- Pediatric studies
- Clinical and Rehabilitation
- Functional studies
- Neuroscience studies
- Child cognitive development
- Hyperscanning, such as parent-child interaction/synchrony and toddler peer-to-peer interaction
- Hypoxia studies, and more

## Software

All Brite family devices include OxySoft, our proprietary NIRS recording and analysis software, along with Brite Connect, our new software designed for seamless and visually appealing fNIRS data acquisition. These user-friendly software offer real-time calculations of oxy-, deoxy-, and total hemoglobin.

**OxySoft** seamlessly synchronizes and stores all data in a single file, allowing analysis during or after recording. It supports exporting raw data to various formats, including the standardized .snirf format, and is compatible with third-party software. Real-time data streaming to platforms like MATLAB or Python is also enabled. To ensure data safety during Bluetooth disconnections, OxySoft's Offline Recovery Tool allows researchers to retrieve data effortlessly in just a few clicks.

**Brite Connect** provides an intuitive, visually pleasing solution for fNIRS data acquisition, ensuring exceptional quality and compatibility with all Brite family devices. It features a Signal Quality Index (SQI) for accuracy and a repair function to recover data during wireless interruptions. Data is exported in the standardized .snirf format for seamless analysis with tools like Homer and MNE Python. It also supports Lab Streaming Layer for real-time event streaming input.



## Brite family capabilities

The Brite has established itself as the leading and most advanced wearable fNIRS device on the market, setting a new benchmark for multi-channel wearable fNIRS systems. Designed to accommodate participants of all ages, the Brite family of devices ensures a perfect fit for diverse study populations, from infants to older adults. This versatility makes it ideal for complex research scenarios, such as social studies involving family dynamics or group interactions.

With exceptional compatibility, the Brite family devices enable a wide range of hyperscanning applications. Whether you're exploring cognitive processes, social behaviors, or clinical applications, the Brite family offers a variety of devices tailored to meet your specific research needs. Combining flexibility, accuracy, and ease of use, the Brite family empowers researchers to push the boundaries of fNIRS technology and achieve groundbreaking results.



## What's in the box?

Brite Lite Frontal mini  
research package

Brite Lite Frontal mini  
mini headband and BriteBelt  
OxySoft and Brite Connect software  
OxySoft and Brite Connect license keys

Analyzing unit with pre-installed software  
USB Bluetooth dongle  
Universal micro-USB cable & battery charger  
User manual & quick start guide in English  
Support in setting up your research

# Technical specifications

|                                      |                                                                                       |
|--------------------------------------|---------------------------------------------------------------------------------------|
| TECHNOLOGY                           | Continuous wave Near-Infrared Spectroscopy (NIRS) using the modified Beer-Lambert law |
| RELATIVE MEASURES                    | Oxy-, deoxy-, and total hemoglobin concentration changes                              |
| CHANNELS                             | 8 channels                                                                            |
| TEMPLATE & LOCATION                  | Fixed template (2x4) optimized to measure the prefrontal cortex                       |
| INTER-OPTODE DISTANCE                | 25 mm                                                                                 |
| TRANSMITTERS                         | 4 LEDs, each with 2 wavelengths                                                       |
| RECEIVERS                            | 4 photodiodes                                                                         |
| WAVELENGTHS                          | Standard 760 and 850 nm, custom wavelength possible                                   |
| AMBIENT LIGHT CORRECTION             | Proprietary algorithm to filter out ambient light                                     |
| OPTODE HOLDERS                       | 3 available heights to adjust pressure                                                |
| HEADBANDS                            | One size, adjustable from 46 to 54 cm                                                 |
| DIMENSION                            | Control Unit: 85 x 85 x 30 mm                                                         |
| TOTAL WEIGHT                         | 222 g including battery and headband                                                  |
| ENVIRONMENT                          | Operating temperature: 10 - 35 °C                                                     |
| INDICATORS                           | Power, measuring, battery status, Bluetooth                                           |
| POWER                                | Up to 3 hours – extendable with our EverGo battery extension                          |
| SAMPLE RATE                          | Up to 150 Hz                                                                          |
| ORIENTATION SENSOR                   | 3-axis accelerometer and 3-axis gyroscope                                             |
| DATA COLLECTION & STORAGE            | Online, offline 100+ hours, automatic back-up of data                                 |
| DATA ACQUISITION & ANALYSIS SOFTWARE | OxySoft (3D extension upgrade); Brite Connect                                         |
| OPERATING SYSTEM                     | Windows 11                                                                            |
| EVENTS                               | Online, offline, or PortaSync                                                         |
| ELECTROMAGNETIC COMPATIBILITY        | Compatible with TMS, EEG, EMG, ECG                                                    |
| HARDWARE SYNC OPTIONS                | PortaSync, parallel cable, serial cable                                               |
| SOFTWARE SYNC OPTIONS                | LSL, DCOM (e.g. Matlab, E-prime, Presentation)                                        |

## Relevant literature for the Brite Lite Frontal mini

Licea, J., Khan, O. A., Singh, T., & Modlesky, C. M. (2024). Prefrontal cortex hemodynamic activity during a test of lower extremity functional muscle strength in children with cerebral palsy: A functional near-infrared spectroscopy study. *European Journal of Neuroscience*, 59(2), 298-307.

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Ranger, M., Albert, A., MacLean, K., & Holsti, L. (2021). Cerebral hemodynamic response to a therapeutic bed for procedural pain management in preterm infants in the NICU: a randomized controlled trial. *Pain Reports*, 6(1), e890.

Lai, Y., Wang, Z., Yue, G. H., & Jiang, C. (2020). Determining whether tennis benefits the updating function in young children: A functional near-Infrared spectroscopy study. *Applied Sciences*, 10(1), 407.

Gossé, L. K., Pinti, P., Wiesemann, F., Elwell, C. E., & Jones, E. J. (2023). Developing customized NIRS-EEG for infant sleep research: methodological considerations. *Neurophotonics*, 10(3), 035010-035010.

Claessen, V. P., Hopman, J. C., Klaessens, J. H., Sengers, R. C., & Liem, K. D. (2009). Changes in cerebral oxygenation and hemodynamics during cranial ultrasound in preterm infants. *Brain and Development*, 31(6), 427-434.

## NIRS devices



### Brite

A wearable multi-channel NIRS device with enhanced flexibility for brain oxygenation measurement that measures oxy-, deoxy- and total hemoglobin concentration changes from any cortical brain areas.



### BabyBrite

A wearable & flexible multi-channel fNIRS device for brain oxygenation measurement. The BabyBrite is specially designed to provide extra comfort to young babies.



### PortaLite mini

The mini variant of PortaLite MKII which is optimized for pediatric research.



### PortaLite

Truly lite & advanced oxygenation monitoring device that measures local tissue saturation index (TSI), as well as oxy-, deoxy- and total hemoglobin concentration changes.