

# Brite family

The ultimate selection of multi-channel wearable fNIRS

The Brite is the most advanced wearable fNIRS device on the market, setting the standard for multi-channel devices. Our Brite family members offer greater flexibility and accuracy for research purposes.



Measures oxy-, deoxy-, and total hemoglobin concentration changes in the brain wirelessly.



Truly wearable & flexible for a wide range of participants.



Easy analysis of your data with our superior analysis software; OxySoft.



Multi-power gain control feature that allows to select the optimal light intensity settings for each channel and each participant.



Integrated 3-axis accelerometer & 3-axis gyroscope to measure movement data.



Compatible with other techniques such as EEG and tDCS.

## OVERVIEW

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## Near Infrared Spectroscopy

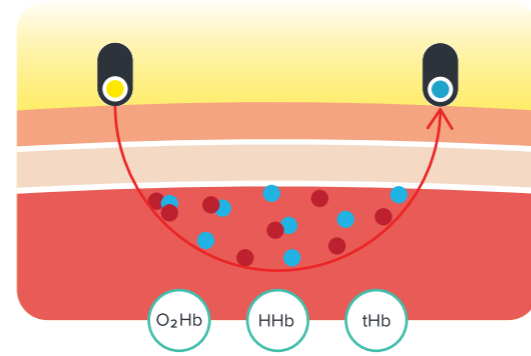
Near Infrared Spectroscopy (NIRS), the technique which our devices are based on, relies mainly on two characteristics of the human tissue. The first is the relative transparency of human tissue for light in the NIR range. The second one is the oxygen-dependent absorbance of hemoglobin.

fNIRS (functional near-infrared spectroscopy) measures the changes in oxyhemoglobin and deoxyhemoglobin, which reflect local brain activity in real-time. Based on these principles, the Brite devices used within the Brite family can monitor brain activity of your subjects.

- This can be done:
- Non-invasively;
  - Continuously, including recording and feedback;
  - Affordably and without disposables needed;
  - Wireless with almost no setup time;
  - In easy setup and in a vast range of environments.

### WHAT CAN NIRS DO FOR ME?

- NIRS is used in many fields of research. NIRS measures the relative changes in the concentration of oxyhemoglobin (O<sub>2</sub>Hb), 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.



### AREA OF APPLICATIONS

- Neuroscience
- Cognitive studies
- Psychological research
- Sports science
- Developmental studies
- Hyperscanning
- Clinical Research
- BCI

## Consider choosing the Brite family for the following reasons

### WEARABILITY

The Brite family members can be attached to our specifically designed neoprene headcaps / headbands. Besides shielding from ambient light, these sturdy, high-quality headcaps are proven to provide great comfort and are a perfect fit for subjects worldwide. The three adjustable optode heights assure good optode-and-skin contact while retaining comfortability. This combination of the sturdy headcap and proper optodes pressure ensures that each optode remains securely in place throughout the study.

The Brite family members can also be used in subjects with plenty of hair, which can easily be moved aside to make sure that optimal signal quality is achieved.



### QUALITY

Our Brite family line is made from high-quality materials and designed with comfort in mind, ensuring all participants experience maximum ease. Signal quality is paramount in recording NIRS data. That's why our devices come with OxySoft, Artinis' NIRS analysis software, which is integrated with the Signal Quality Index algorithm to validate your NIRS signal quality during data collection. Additionally, our loyal customers attest to Artinis' outstanding customer support, delivered by our expert application specialists.

### FLEXIBILITY

Being the pioneer in the market in terms of flexibility, the Brite family is the absolute choice for studies performed in real-life setups. The members are practically wireless, granting subjects complete freedom of movement. The plug-and-play system design makes setting up the optode configuration enjoyable, while the Brite, Brite Lite, and BabyBrite unlock endless optode layout possibilities.

Furthermore, the Brite Lite or Brite Lite Frontal is an excellent starting point as it can be upgraded down the line to fit your research needs.

## The Brite family



AS FLEXIBLE AS YOU ARE

## Brite

The Brite is our most advanced wearable & user-friendly device to measure brain oxygenation from any cortical brain region with up to 27 channels. It offers maximum flexibility for researcher and participant due to great choice of optode configurations and inter-optode distances, as well as light weight and wearability.

NUMBER OF CHANNELS: 27 (up to 54 in dual mode)  
MEASUREMENT LOCATION: Cortical  
SHORT CHANNEL POSSIBILITY: Yes



FRONTAL MEASUREMENT AT ITS BEST

## Brite Frontal

An fNIRS device with 24 channels to measure brain activity in the prefrontal cortex, designed for ease of use and optimal performance.

NUMBER OF CHANNELS: 24  
MEASUREMENT LOCATION: Prefrontal  
SHORT CHANNEL POSSIBILITY: No

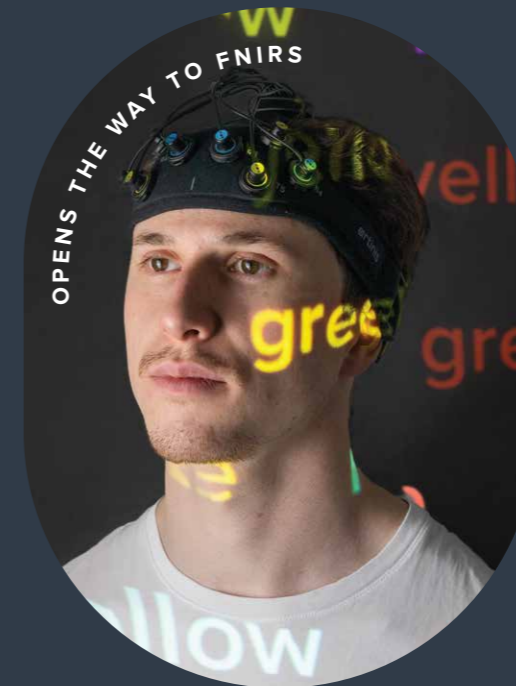


ALWAYS HIT THE MARK

## Brite Lite

A wireless & flexible 10-channel fNIRS device for brain oxygenation measurements from any cortical brain region.

NUMBER OF CHANNELS: Up to 10  
MEASUREMENT LOCATION: Cortical  
SHORT CHANNEL POSSIBILITY: Yes



OPENS THE WAY TO fNIRS

## Brite Lite Frontal

A wireless & wearable 8-channel fNIRS device that is optimized for measuring prefrontal activation in the brain.

NUMBER OF CHANNELS: 8  
MEASUREMENT LOCATION: Prefrontal  
SHORT CHANNEL POSSIBILITY: No



EXPLORING THE BRITE MIND:  
flexibly, reliably, comfortably

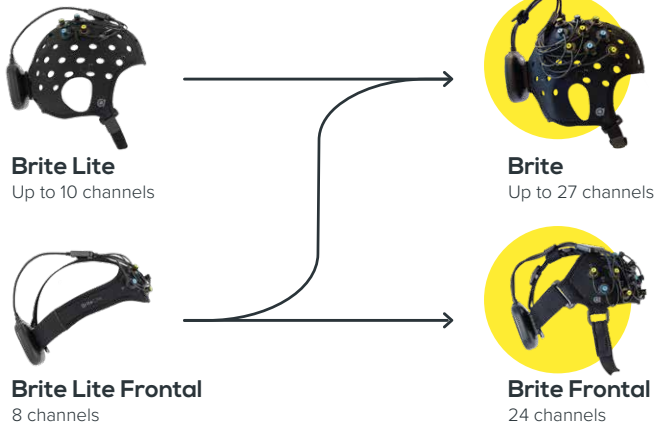
## BabyBrite

A wearable & flexible multi-channel fNIRS device for brain oxygenation measurement. The BabyBrite is specially designed to provide extra comfort to babies aged from 0 to 2.

NUMBER OF CHANNELS: 27  
MEASUREMENT LOCATION: Cortical  
SHORT CHANNEL POSSIBILITY: No



## Supporting features & upgrade possibilities



The Brite Lite can be upgraded down the line to fit your research needs. We offer different upgrade possibilities within the Brite family devices to increase the number of channels, as well as to add features and to enhance options to measure from further brain regions.

The Brite Lite can be updated to a Brite, increasing the number of channels to up to 27, enabling for coverage of larger or additional brain areas and further enhances freedom. This allows you to choose a device that best suits your current situation, and upgrade to a better fit when your needs evolve.



Upgrade possibilities depend on availability and compatibility. Please contact us to discuss a solution tailored to your needs.

## 3D digitization & synchronization



Polhemus Viper and Patriot devices are well-known in the neuroscience world for precise digitization of sensor positions. In combination with our Brite devices, you can measure the exact location of the optodes on your participant's head within OxySoft. With our OxySoft 3D extension you will benefit from a purely integrated solution, which guides you through the digitization process.

## References to wireless fNIRS

Chai, K.X., Goodwill, M.A., Leuk, J.S., Teo, W.P. (2023). Treadmill Walking Maintains Dual-task Gait Performance and Reduces Frontopolar Cortex Activation in Healthy Adults. *Neuroscience*. Jun 15;521:148-156.

Figeys, M., Loucks, T.M., Leung, A.W.S., Kim, E.S. (2023). Transcranial direct current stimulation over the right dorsolateral prefrontal cortex increases oxyhemoglobin concentration and cognitive performance dependent on cognitive load. *Behav Brain Res*. Apr 12;443:114343.

Du, J., Shi, P., Fang, F., Yu, H. (2022). Effect of music intervention on subjective scores, heart rate variability, and prefrontal hemodynamics in patients with chronic pain. *Front Hum Neurosci*. Nov 17;16:1057290.

Huang, Y. H., Chen, C. M., Wang, Y. M., & Sun, C. W. (2020). Quantitative Evaluation of Age-Related Effects Based on Oxygenation Dynamic Signals During the Wisconsin Card Sorting Test. *IEEE Journal of Selected Topics in Quantum Electronics*, 27(4), 1-5.

Scholkmann, F., Holper, L., Wolf, U., & Wolf, M. (2013). A new methodical approach in neuroscience: assessing inter-personal brain coupling using functional near-infrared imaging (fNIRI) hyperscanning. *Frontiers in human neuroscience*, 7, 813.

Sappia, M. S., Hakimi, N., Colier, W. N., & Horschig, J. M. (2020). Signal quality index: an algorithm for quantitative assessment of functional near infrared spectroscopy signal quality. *Biomedical Optics Express*, 11(11), 6732-6754.

## Reference to fNIRS hyperscanning study

Panico, F., De Marco, S., Sagliano, L. et al. Brain hemodynamic response in Examiner-Examinee dyads during spatial short-term memory task: an fNIRS study. *Exp Brain Res* 239, 1607–1616 (2021). <https://doi.org/10.1007/s00221-021-06073-0>

## What's in the box?

Brite package

Brite devices as per request  
Neoprene headbands/headcaps  
OxySoft, NIRS data analysis software  
Laptop with pre-installed software

License key & Bluetooth dongle  
Battery charger & micro-USB cable  
Starter kit and complete system guide  
Support in setting up your research

## Ask for info

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