

## Press Release



### **Succeeded in world-first Simultaneous measurement of “Hb change” and “Apparent arterial oxygen saturation” by unique Optical imaging equipment**

July 27, 2011

Spectratech, Inc.

Spectratech, Inc. succeeded in commercialization of the optical brain function measurement equipment to measure “Hb change” and “Apparent arterial oxygen saturation (SpO2)” simultaneously. It is named OEG-SpO2, and will be officially released in October, 2011.

The optical brain function imaging can make the brain activities visible, and has come to be used for the brain researches on various purposes. Especially, "Differential diagnosis assistance of symptoms of depression using the optical topography inspection" was governmentally approved as Advanced Medical Care in March, 2009 (in Japan), and the use of optical brain function imaging equipment has been demanded throughout society. Spectratech has advanced the developments and sales of the compact and low-priced OEG-16 for the researchers on brain functions up to now. That is, it succeeded in completely digitalizing the imaging technology by the past analog signal processing by the spread spectrum light modulation technology. OEG-16 has come to be supported by the researchers in a lot of academic societies and study groups as a compact and low-priced equipment excellent in ease of use.

Other companies' equipments ever commercialized to evaluate the brain functions are designed to measure "Hb change" in the local brain. Biological information by change in the light absorption characteristics of hemoglobin obtained by NIRS includes the pulse wave information of Hb flow known as pulse oximeter in addition to “Hb change”. The pulse wave signal in the local brain is extremely weak compared with "Hb change", and it was very difficult to extract it so far because of the limit in signal-to-noise ratio (SNR). This time, Spectratech has advanced the spread spectrum light modulation technology further, and succeeded in improving the past SNR significantly. That makes it possible to measure also "Apparent SpO2" in the local brain simultaneously in addition to "Hb change" measurement.

As for the fundamental measurement of "Apparent SpO2", we have received a guidance of Professor Munetaka Haida at Tokai University Junior College of Nursing and Technology, who is the foremost authority on the optical brain function researches. In the frontal region measurement by OEG-SpO2 for the carotid stenosis patient and the atherosclerotic patient, a significant decrease in the Apparent

SpO2 is confirmed to the brain activation, and it resulted in suggesting the possibility to obtain the new diagnostic information in the local brain. The content was reported at The 14th Annual Meeting of Japan Optical Functional Brain Imaging Society on July 23, 2011.

It will be possible to conduct the researches more deeply including the cerebral circulation and the metabolism because the simultaneous measurement of the arterial oxygen saturation was newly added to the optical brain function measurement besides Hb change. It is low-priced, and can measure non-invasively in usual posture. The optical brain function measurement to which the new index is added will only attract attention in the future.

Advance orders will start to be taken from August this year. Domestic price of OEG-SpO2 is 2.56 million yen, and annual sale are expected to be 100 sets. In addition, it is also scheduled to sell the upgrade kit for the customers who already purchased OEG-16.

Please note that OEG-SpO2 is a product for the most advanced brain researches, not approved under Japan's Pharmaceutical Affairs Act aimed at the specific diagnosis and treatments.

Optical imaging brain function measurement equipment has become to be used for research purposes such as psychology, pedagogy, linguistics, health education, nursing care education, sports, and BMI (Brain Machine Interface) recently beyond the medical front, and it has got a lot of attention. OEG-SpO2 has been developed aiming to help the researchers in such wide fields.

Spectratech is an entrepreneurial venture, who has the new and advanced technologies such as the patents related to the medical equipments utilizing the spread spectrum technologies, and their primary business is development, fables manufacturing, and sales of medical equipments centering on the researchers and the engineers for the semiconductors and the imaging technologies.

**Cerebral blood flow change (Hb change):** It generally means a change in concentration of oxyhemoglobin and deoxyhemoglobin measured in the local brain, and it has come to be called "Hb change" in the academic society, etc. recently.

**SpO2:** The exact term is percutaneous arterial oxygen saturation, and it is an index to show how much oxygen contained in the arterial blood. In general, the oxygen saturation which is calculated and displayed by the pulse oximeter that is measured from the pulse wave component of peripheral vessels in a fingertip, etc. is called SpO2. The unit is %. This time, "Apparent" is prefixed because the value is derived by a new calculating formula corresponding to the pulse wave change in the local brain where an observation different from the peripheral vessels in a fingertip, etc. is made, and it doesn't agree to the value which the pulse oximeter indicates.

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## Spectratech OEG-SpO2 Main unit



## Spectratech OEG-SpO2 Main unit (in the bag) and Head module that are worn on her

