1. Record Nr. UNINA9910557576903321

Autore	Hoshi Yoko
Titolo	New Horizons in Time-Domain Diffuse Optical Spectroscopy and Imaging
Pubbl/distr/stampa	Basel, Switzerland, : MDPI - Multidisciplinary Digital Publishing Institute, 2020
Descrizione fisica	1 online resource (246 p.)
Soggetti	Medicine and Nursing Neurosciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	Jobsis was the first to describe the in vivo application of near-infrared spectroscopy (NIRS), also called diffuse optical spectroscopy (DOS). NIRS was originally designed for the clinical monitoring of tissue oxygenation, and today it has also become a useful tool for neuroimaging studies (functional near-infrared spectroscopy, fNIRS). However, difficulties in the selective and quantitative measurements of tissue hemoglobin (Hb), which have been central in the NIRS field for over 40 years, remain to be solved. To overcome these problems, time-domain (TD) and frequency-domain (FD) measurements have been tried. Presently, a wide range of NIRS instruments are available, including commonly available commercial instruments for continuous wave (CW) measurements, based on the modified Beer-Lambert law (steady-state domain measurements). Among these measurements, the TD measurement is the most promising approach, although compared with CW and FD measurements, TD measurements are less common, due to the need for large and expensive instruments with poor temporal resolution and limited dynamic range. However, thanks to technological developments, TD measurements are increasingly being used in research, and also in various clinical settings. This Special Issue highlights issues at the cutting edge of TD DOS and diffuse optical tomography (DOT). It covers all aspects related to TD measurements,

including advances in hardware, methodology, the theory of light propagation, and clinical applications.