

*Book Review***Simultaneous EEG and fMRI - Recording, Analysis, and Application***Markus Ullsperger • Stefan Debener (Eds.)**Oxford University Press, Inc., Oxford, New York**Hardback, 336 pages, ISBN: 9780195372731*

One of the major challenges in science is to study and understand the human brain. Numerous methods examining different aspects of brain functions have been developed and employed. To study systemic interactions of brain networks in vivo, non-invasive methods such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) have been used with great success. However, each of these methods can map only certain, quite selective aspects of brain function while missing others; and the inferences on neuronal processes and information flow are often rather indirect.

To overcome these shortcomings of single methods, researchers have attempted to combine methods in order to make optimal use of their advantages while compensating their disadvantages. Hence, it is not surprising that soon after the introduction of fMRI as a neuroimaging method the possibilities of combinations with EEG have been explored. This book is intended to aid researchers who plan to set up a simultaneous EEG-fMRI laboratory and those who are interested in integrating electrophysiological and hemodynamic data.

Each of the four sections of this book deals with a different aspect of performing successful EEG/fMRI coregistrations. The first

section gives an in depth overview of the physiological aspects of EEG and fMRI as seen from the context of combined recordings. The second section deals with the technical basics of recording simultaneous EEG-fMRI, a wide field ranging from important recording hardware considerations, patient and equipment safety issues to a discussion of sequence selection, artifact removal and image reconstruction methods. The third section describes the many recent advances in the field of multimodal data integration and the fourth section gives an in depth insight into current and future applications of this exciting technology.

All of the authors of the 18 chapters of the book are well established authorities in their respective fields of research and the general approach throughout the book is to give the reader a well balanced overview of the current approaches to recording EEG in the MR as well as to the many promising techniques that are currently emerging. In addition, it also points to open questions and tries to give directions for future research. ●

