This volume brings together neuroscientists, psychiatrists, neurologists, and ethicists to discuss inter-related advances and challenges emerging in the exciting field of brain stimulation.

Discussion focuses on new methodologies that are aimed at bringing direct measurement of brain activity to control electrical brain stimulation techniques. Such direct electrical stimulation techniques offer a novel approach to precisely alter circuit mechanisms in the brain and a promise of temporal precision that may improve clinically relevant effects. A range of electrical stimulation techniques are discussed, with presentation of both clinical research and animal models. Advancing brain stimulation as an investigative therapeutic technique and a science presents several conceptual challenges, ethical question and pragmatic difficulties inherent to the industrial academic collaborations necessary for research with medical devices.