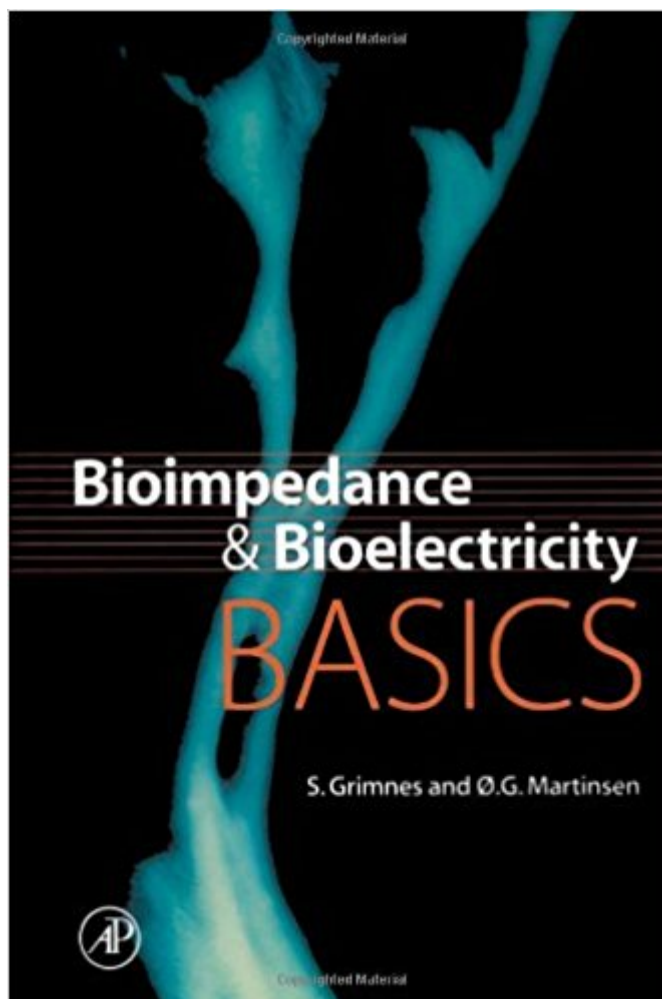


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# Bioimpedance And Bioelectricity Basics (Biomedical Engineering)



## Synopsis

Bioimpedance and Bioelectricity Basics is unique in providing all the information needed to follow the interdisciplinary subjects of bioimpedance and bioelectricity without having to be a graduate student in the relevant fields. For the first time, one book offers the broadest possible introduction to all use and effects of electrical fields in tissue, dealing with the most basic chemical and physical functions of life. Very few books have covered the dielectric and electrochemical side of the subject, despite its importance; Bioimpedance and Bioelectricity Basics does. It also includes the electrical engineering concepts of network theory and the complex math needed. Up to now, there has been work done by physicists and engineers on one side, doctors and biologists on the other, this book fills the gap, providing the knowledge for both groups. Key Features\* is one complete source and reference guide to a complex and disparate field\* gives the reader the latest research and applications\* is highly illustrated, with an indepth explanation of all mathematics

## Book Information

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## Customer Reviews

Bioimpedance and Bioelectricity Basics is unique in providing all the information needed to follow the interdisciplinary subjects of bioelectricity and bioimpedance, without having to be a graduate student in all the relevant fields. For the first time, one book offers the broadest possible introduction to all use and effects of electrical fields in tissue, dealing with the most basic chemical and physical functions of life. Very few books have covered the dielectric and electrochemical side of the subject, despite its importance. This book does so, starting from the duality of the electrical properties of

tissue. Grimnes and Martinsen have succeeded in bringing together the physical and medical approaches, and show how using models from both fields can elucidate the whole subject. *Bioimpedance and Bioelectricity Basics*\* is one complete source and reference guide to a complex and disparate field\* gives the reader the latest research and applications\* is highly illustrated, with an indepth explanation of all mathematics *Bioimpedance and Bioelectricity Basics* will be essential reading for graduate and postgraduate students in biomedical engineering or biophysics. Scientific personnel in research institutes and industrial research departments (producing medical and electrochemical instrumentation) will find the book invaluable. Medical doctors in neurology, cardiology, dermatology, electrophysiology, cell physiology and clinical chemistry will also find this a complete reference tool.

Sverre Grimnes graduated in 1963 as an electronic engineer from the Technical University of Trondheim. He spent four years at SI, Oslo followed by a year at Sorbonne in Paris before moving to the University of Oslo's Department of Chemistry. From 1973-2001 he was Head of the Department of Biomedical and Clinical Engineering at Rikshospitalet and since 1984 has also been Professor at the Department of Physics at the University of Oslo. His research interests include electrical and physiological properties of human skin, patient electrical safety, and bioimpedance basic theory and instrumentation. Professor Grimnes authored a hugely successful Norwegian book series on Medical Technology and has been awarded the Herman P Schwan Award and the Kings Gold Medal of Merit. Årjan G. Martinsen received his M.Sc. and PhD in electronic engineering from the Department of Physics at the University of Oslo, with both of his theses focusing on the electrical properties of human skin. Since completing his PhD in 1995, Martinsen has held a permanent position in the same department and currently leads the electronics research section and is Coordinator of the Oslo Bioimpedance Group. As well as his work at the university, Martinsen also holds a part time research position in the Department of Clinical and Biomedical Engineering at Oslo University Hospital, his main research interest being electrical bioimpedance. With Sverre Grimnes he is the founding editor-in-chief of the *Journal of Electrical Bioimpedance* ([www.bioimpedance.net](http://www.bioimpedance.net)).

Great and affordable product. Good weight which means less pressure while cutting. Excellent ergonomic. Sharp. Cutting tomatoes and onions was a pleasant experience. I bought this product to replace a old one. quickly. Kelly needs it , very good. as described .

Instead of delving into research papers on this subject, the authors offer this book. It is a specialised and useful summary of what is known about bioelectricity. The circuits are simple, at least to an electric engineer. But then, she would be unlikely to know the biological aspects covered here. The level of physics is also straightforward. Simple dielectric models and usages of Maxwell's Equations. Nothing to scare off the physics student. Significant portions of the book are addressed to the experimenter. Giving help about instrumentation and designs. Plus descriptions of the types of data you are likely to get, and how to analyse these. Well suited for an experimentalist in either biology or physics.

Although the book is intended for persons in the biological sciences it is very unlikely to be of much help to those in medical and clinical practice hoping to understand better the applications and interpretation of bioimpedance.

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