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Peder C. Pedersen
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Part 4/5

Bioelectric and Biophysical Aspects of Bioengineering, Molecular Electronics, and Models of Physiological Systems

THIS PART CONTAINS:

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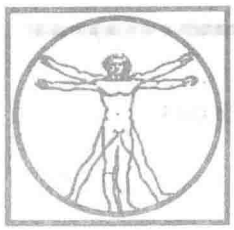

PREFACE

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Proceedings of the Twelfth Annual International Conference of the IEEE Engineering in Medicine and Biology Society

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These Proceedings represent the archival record of the 12th Annual International Conference of the Institute of Electrical and Electronics Engineers — Engineering in Medicine and Biology Society. The purpose of the Conference is to provide an international forum for the exchange and the dissemination of the latest scientific and technical information in biomedical engineering, to cover important developments in engineering and science which may impact biomedical engineering, and to give the participants a sense of future directions in health care technologies and biomedical research.

The Conference has steadily grown to become the largest meeting of biomedical engineers in the world. Its major strength and importance lie in the ability to unify the broad and diverse fields of biomedical engineering. In 1990, the Conference derives its breadth and depth from the cumulative efforts of over 2500 biomedical engineers and scientists worldwide and the generous funding and assistance from several corporations and agencies acknowledged on the previous page. These contributions have resulted in approximately 1200 referred papers spanning 30 Program Tracks, four Mini-Symposia, and several Special Program Events.

Following the model of the previous conferences, the Proceedings are organized into five Parts each of which comprises papers from groups of related tracks. Two 'Overview' pages included in each Part of the Proceedings prior to the Table of Contents are intended to help the reader cross-reference Program Tracks, Mini-Symposia and Special Events with the corresponding Proceedings Parts and pages.

A conference of this magnitude is founded on the dedicated collaboration of a great number of volunteers. Our deep appreciation for the sincere commitment demonstrated by each and every member of the Conference Committee is acknowledged through the listings over the following two pages. We recognize with special gratitude the Chairs and Organizers of the Programs Tracks, the Special Program Events, the Mini-Symposia, the Technical Sessions and the Student Activities. The strong international participation in the Conference is a testament to the diligence of the International Committee under the leadership of Dr. Joachim H.Nagel. Our predecessors who had traveled the path before us, especially the Chairs of the 1989 Conference, Dr. Francis A. Spelman and Dr. Yongmin Kim, have been a source of advice and encouragement. We have also been privileged to enlist the solid support of many past and present officers of the Engineering in Medicine and Biology Society, in particular Dr. Barry Feinberg, Dr. Charles J. Robinson, Dr. Susan M. Blanchard and Dr. Willis J. Tompkins. Many members of the staff at our respective institutions have cheerfully assisted us with the daily chores.

Finally, we would like to thank Dr. Lawrence R. Whicker and Mrs. Margaret R. Whicker of LRW Associates for their skillful services in providing the professional management of the Conference, to Mr. Andrew Short of Bumper Crop Studios for his tireless efforts and artistic touch in producing the Advance and Final Programs, and the Proceedings under extreme time pressure, to Mr. Michael Sherman from University Relations, Worcester Polytechnic Institute, for his fine work on letterhead and graphical design and to Ms. Mary Schiminsky and Dr. Maryam Moussavi from Drexel University for their able assistance to exhibit organizers.

Dr. Peder C. Pedersen
Program Chair

Dr. Banu Onaral
Conference Chair

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OVERVIEW BY PROGRAM EVENT

BIOMEDICAL ENGINEERING PERSPECTIVES:
HEALTH CARE TECHNOLOGIES FOR THE 1990'S AND BEYOND
Philadelphia, Pennsylvania, USA • November 1–4, 1990

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OVERVIEW BY PART

Part 4/5

Bioelectric and Biophysical Aspects of Bioengineering, Molecular Electronics, and Models of Physiological Systems

Track 1: Bioelectric Phenomena

Track 14: EM Interactions

Track 7: Biophysical and Biochemical Measurements

Track 22: Molecular Electronics

Track 25: Physiological Systems and Models