

PREFACE

The series of Japan-Hungary Joint Seminars on Applied Electromagnetics in Materials and Computational Technology are established to stimulate the exchange of creative ideas and promote the new achievements by bringing together the scientists working in the field of applied electromagnetics to report on their recent advances and to discuss the problems of future research.

The seminars cover a wide range of topics, extending the theoretical discussion of applied electromagnetics to new numerical methods and various applications. The seminars include sections as e.g. general theory of electromagnetic fields, eddy current, coupled and nonlinear fields, magnetic field and materials, electromagnetic waves, inverse problems, biomagnetics, free surface problems, fractals and high voltage problems.

The series of Japan-Hungary Joint Seminars were initiated in 1990. The first Japan-Hungary Joint Seminar was held on 1–3 July, 1991 in Budapest, organized by the Department of Electromagnetic Theory, Technical University of Budapest. The second Seminar was organized by the Faculty of Engineering, Hokkaido University, Sapporo, Japan and it was held on 16–18 September 1992. The third one was held in Hungary, organized by the Technical University of Budapest, on 10–13 July, 1994. The fourth one is planned to be held at Fukuyama University, Japan, 1996. The sponsors of the Seminars are the Foundation of Hungarian Credit Bank (1991), (1994), the Japan Society of Applied Electromagnetics (1991), (1992), Hungarian National Power Company (1994), Technical University of Budapest (1991), (1992), (1994) and Hungarian Society of Applied Electromagnetics (1994).

On the Third Japan-Hungary Joint Seminar more than 80 participants with 67 presentations took part, representing a wide spectrum of universities and industrial research institutes from Japan, Hungary and other countries as Austria, Slovakia, Germany, Romania, Russia, Canada and USA.

The subject of the first section was the inverse problems, non-destructive testing where three papers reported on the eddy-current testing method. The second section was devoted to advanced numerical simulation methods with 29 papers. A wide range of the different methods and applications were presented during the Seminar. In the third section for

biological effects of electromagnetic fields 5 papers were presented. Wide interest followed the work in the fourth section devoted to wave propagation in optical fibers and wave guides, and the transient electromagnetic fields, where 12 papers were presented. In the fifth section 13 papers reported on the new results getting in the simulation of electromagnetic fields in nonlinear materials and superconductors. In the section of computational technology five papers reported on the high level application of computers in numerical simulation, including the animation of electromagnetic fields.

The papers presented at the seminars according to the selection of the Scientific Committee are offered to publish in the International Journal of Applied Electromagnetics and in Journals of both Universities. This sample of *Periodica Polytechnica* is a special issue of the Department of Electromagnetic Theory, Technical University of Budapest, publishing selected papers presented at the Third Japan-Hungary Joint Seminar in Budapest, on 10–13. July 1994.

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