

# PREFACE

## NINTH INTERNATIONAL VACUUM CONGRESS and the FIFTH INTERNATIONAL CONFERENCE ON SOLID SURFACES

MANFRED KAMINSKY, Guest Editor

*Argonne National Laboratory  
Materials Science & Technology Division  
9700 S. Cass Avenue, Argonne, Illinois 60439*

This volume contains papers presented at the fusion sessions of the Ninth International Vacuum Congress (IX IVC) and Fifth International Conference on Solid Surfaces (V ICSS) as programmatic overviews, invited progress reports, and contributed papers. The IX IVC and the V ICSS were sponsored by the International Union for Vacuum Science, Technique and Applications (IUVSTA), cosponsored and organized by the Spanish Vacuum Society (ASEA), and held in Madrid, Spain, September 26–October 1, 1983. This is the first time that regular fusion sessions have been featured at an International Vacuum Congress sponsored by IUVSTA. This resulted in part from a recent decision of the executive council of IUVSTA to form a Fusion Division. At the time of this writing 17 nations have joined this division. This fact reflects well the international enthusiasm for the development of fusion power as a promising new energy source.

Twelve technical fusion sessions were arranged for the IX IVC to cover such topics as the design and construction of large fusion devices; the pumping, leak testing, and repair of such devices; conditioning of first-wall surfaces and plasma/wall interactions; fueling of fusion devices; handling, storage, and recovery of radioactive gases (e.g., tritium); neutral and negative ion beam injector technology; vacuum measurement and plasma diagnostics; vacuum material development; and microtarget fabrication and characterization. Of the twelve sessions, three were cosponsored by the Vacuum Science Division and one by the Thin

Film Division of IUVSTA. One special session was arranged to feature the fusion power development plans of the European Community, Japan, and the United States. The papers from this session appear first in this volume. The sequence of the other papers in this volume differs from the one arranged for the conference sessions. The present sequence should help to bring related topics closer together. All papers presented here have undergone a vigorous review process. It should be pointed out that most of the invited papers for the fusion sessions have been printed in the invited speakers volume of the *Proceedings of the IX IVC and V ICSS*, J. L. de Segovia, Ed., and were distributed at the time of the congress. These papers were not included in this volume.

As chairman of the Fusion Section of the International Organizing Committee of the IX IVC and the V ICSS, I am grateful to the members of the organizing committee for providing me with the time needed to arrange twelve technical fusion sessions. The members of this committee are: F. Abelés (France), F. Agulló (Spain), N. Cabrera (Spain), A. Camuñas (Spain), M. Croset (France), J. L. de Segovia (Spain), J. F. García de la Banda (Spain), F. García-Moliner (Spain), J. Hengevoss (Switzerland), D. A. King (U.K.), J. M. Martínez-Duart (Spain), J. M. Rojo (Spain), F. Rueda (Spain), and F. Verdaguer (Spain).

For the development of the technical program for the fusion sessions, I would like to express my gratitude to the members of the Fusion Section program

committee: J. L. Alvarez-Rivas (Spain), R. Dobrozemsky (Austria), W. O. Hofer (FRG), F. Manero (Spain), A. Miyahara (Japan), B. Navinsek (Yugoslavia), A. Pérez Navarro (Spain), F. Prevot (France), and J. A. Tagle (Spain).

I am also grateful to the following people for their valuable advice and help: T. Batzer (U.S.), J. Cecchi (U.S.), S. Cohen (U.S.), D. Coffin (U.S.), B. Coppi (Italy), P. della Porta (Italy), P. Deschamps (France), F. Dylla (U.S.), K. Ehlers (U.S.), E. Franconi (Italy), R. J. Fries (U.S.), A. Hunt (U.S.), K. Kim (U.S.), W.

Lange (U.S.), G. McCracken (U.K.), J. Miller (U.S.), R. Pyle (U.S.), M. Sabado (U.S.), B. Terreault (Canada), E. Vietzke (FRG), and F. Waelbroeck (FRG).

As guest editor I would like to thank Professor George Miley, the editor of *Fusion Technology*, for his help and encouragement. For help in the preparation of this issue for publication, I am grateful to Mr. Michael Diekman, Manager of Publications, and Ms. Lorretta Palagi of the American Nuclear Society. I would like to acknowledge the efficient secretarial help of Lee Northcutt, Argonne National Laboratory.