

# **Microwave and Radio Frequency Applications**

**Proceedings of the Third World Congress on  
Microwave and Radio Frequency Applications**

**“Bridging Science, Technology and Applications”**

**Edited by:**

**Diane C. Folz  
John H. Booske  
David E. Clark  
John F. Gerling**

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*Note: The papers in this book are peer-reviewed. Each paper underwent at least two reviews; one review by a member of the microwave processing research community and a second review by one of the editors of the book.*

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# Preface

In 1988, the Materials Research Society held its first symposium on microwave processing of materials and over the next decade the Materials Research Society and the American Ceramic Society held symposia on the subject on an annual basis, with the symposia alternating between the two societies. Other professional organizations, such as the International Microwave Power Institute, the American Chemical Society, the Association for Microwave Power in Europe for Research and Education (AMPERE) amongst others, also have sponsored symposia in microwave processing. The First World Congress on Microwave and RF Processing was held in Orlando, Florida in January 1997. Its success resulted in the planning of a series of Congresses to be held every two to three years.

In April 2000, the Second World Congress on Microwave and Radio Frequency Processing was held in Orlando, Florida. This Congress was unique in that it provided both interdisciplinary and cross-disciplinary approaches to the use of microwave energy for materials processing. There were over 250 attendees from 25 countries, including chemists, physicists, polymer scientists, electrical engineers, materials scientists, engineers, microwave experts, equipment manufacturers, utility representatives and end-users (i.e., those already using microwave energy as well as those considering its use). Over 150 technical papers were presented at the Congress covering a wide range of radio frequency (RF) and microwave applications in materials processing, including sintering, joining, polymer curing, rubber vulcanization, chemical synthesis, waste remediation, oil separation, medical diagnostics, microelectronics and more. A number of papers were presented that covered the fundamentals of microwave-materials interactions, non-thermal effects and process modeling.

This Third World Congress on Microwave and Radio Frequency Applications was the first Congress to be held outside the U.S., making the meeting a truly international event. While it was not clear in the early planning stages, the meeting in Sydney, Australia was a tremendous success, especially given the troublesome global economic and political environment.

As it was with the first two Congresses, it is clear that we need more participation of the users (and potential users). The researchers and equipment manufacturers have demonstrated their ability and willingness to address and solve technical issues that will allow implementation. What is needed is more input from the users who know their markets and can help identify processes where microwave energy can provide technological and/or economic benefits. For the Fourth World Congress on Microwave and Radio Frequency Applications, scheduled for Austin, Texas in November 2004, we will again reach out to the industrial community in hopes they will share their successes and their needs for the future.

Diane C. Folz  
John H. Booske  
David E. Clark  
John F. Gerling

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Of course, the most important constituents of any symposium are the speakers, authors, session chairs and manuscript reviewers. Thanks to the creativity and dedication of these individuals, the Congress was high quality and smoothly run, resulting in an important and timely publication.

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