International Plasma Technology Center

PLASMA ASSISTED COMBUSTION, GASIFICATION, AND POLLUTION CONTROL

Volume II. Combustion and Gasification

Chief Editor

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Outskirts Press, Inc.
Denver, Colorado

PREFACE

Dear Reader,

As promised, we published Volume 2 of the Plasma Assisted Combustion book, as we call it PAC book, and appreciate your interest in this new, fast growing and exciting field.

You may know that Volume 1 provided a description of different plasma sources especially designed for PAC. Here we collected the most valuable contributions to the field from different research groups all over the globe starting from 1970s. They cover all three types of fuels – gases, liquids, and solids and describe PAC processes that are under development or used industrially.

The first practical applications of different plasma sources for ignition and combustion enhancement date back to the 1960s and 1970s. The first PAC conference was organized by the Editor in 1989 in the former Soviet Union. At this time, the PAC community is relatively well organized with an annual International Workshop and Exhibition on Plasma Assisted Combustion (IWEPAC), now converted into the International Conference on Plasma Assisted Technologies or ICPAT starting in 2012, and special issues in the IEEE Transactions on Plasma Science on the topic of Plasma Assisted Technologies.

This two-volume work is one of the first projects of the newly established International Plasma Technology Center (IPTC). If successful, we plan to publish new editions every three-five years depending on progress in the field.

This book is intended to be used as a textbook at the senior or first-year graduate level by students from all engineering and physical science disciplines, by PhD students, researchers, and as a reference source by in-service engineers and other researchers.

Basic information on plasma physics and the accompanying physical processes important in PAC are contained in Volume 1. Devices, technologies, current state, and future works are placed in Volume 2.

This book does not contain derivations from first principles of some of the more advanced material from plasma physics, electrical engineering, or materials science. Such material can be found in graduate texts. This is also not an encyclopedia.

I would like to express my appreciation to all contributing authors (over 10 from 5 countries), whose support, suggestions, and hard work have contributed to the book in its present form.

Many thanks to the reviewers, whose valuable comments helped significantly improve the quality of the book.

I especially would like to thank Dr. Louis Rosocha for his helpful scientific editing of chapters 1-4, Mr. Michael Rosenberg for very thorough editing of chapters 4 and 8, and my wife Svetlana for technical editing and formatting of the book.

Finally, I am especially desirous of establishing contact with the university professors who teach or plan to develop courses on PAC, students, PAC researches, in-service professionals, and potential investors who use this book, in order to improve it, correct it, and answer any questions. Please feel free to contact me with any corrections or comments at (703) 340-5545 voice, (703) 849-8417 fax or by e-mail at ibmatveev@gmail.com.

Best regards,
The Editor

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McLean, Virginia, USA
November 20, 2015

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