

*Dear Reader,*

*Thank you for your interest in this book.*

*Volume 3 continues the series on Plasma-Assisted Combustion (PAC), which began in 2013, now focusing on Plasma-Assisted Technologies - a field still beyond the reach of even our newest friend, Artificial Intelligence (AI). The content presented here is largely derived from extensive experimental research conducted by Applied Plasma Technologies, Corp., International Plasma Technology Center, Corp., and our esteemed colleagues from several countries.*

*We have chosen to begin this volume with a chapter dedicated to plasma gasification of wastewater sludge, a globally significant and ever-relevant challenge. Our unique approach to this challenge highlights its importance and underscores our contribution to creating a more sustainable and environmentally friendly world.*

*The later chapters reflect the collective efforts of our team and collaborators in space technology development, including testing thermal protection materials and designing planetary life support systems. From Earth to space, this book showcases the vast range of plasma applications.*

*This book is not a collection of reprinted articles but rather a logically structured compilation of original contributions from dedicated professionals in the field of plasma technologies. We do not see ourselves as competitors but as a testament to the power of long-term collaboration. I sincerely appreciate the dedication of over 14 contributing authors from five countries, whose expertise, insights, and hard work have shaped this book.*

*I am also deeply grateful to our reviewers, whose valuable feedback has significantly enhanced the quality of this volume.*

*A special thank you to my wife, Svetlana, for her meticulous technical editing and formatting of the book.*

*The PAC book series is designed for senior undergraduate and first-year graduate students in engineering and physical sciences, PhD researchers, in-service engineers, and professionals seeking a reliable reference on plasma-assisted technologies.*

*Previous Volumes:*

- *Volume 1 covers the fundamentals of plasma physics and key physical processes relevant to PAC.*
- *Volume 2 explores devices, technologies, current advancements, and future developments in the field.*

*Finally, I warmly welcome collaboration and feedback from university professors, students, researchers, professionals, and potential investors who use this book. Your insights will help refine and expand this work.*

*Please feel free to reach out with any comments, corrections, or inquiries at (703) 340-5545 (voice) or via email at [ibmatveev@gmail.com](mailto:ibmatveev@gmail.com)*

*Best regards,  
The Editor*

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