Propellants and Explosives: Thermochemical Aspects of Combustion, 3rd Edition

Naminosuke Kubota

DESCRIPTION

This third edition of the classic on the thermochemical aspects of the combustion of propellants and explosives is completely revised and updated and now includes a section on green propellants and offers an up-to-date view of the thermochemical aspects of combustion and corresponding applications.

Clearly structured, the first half of the book presents an introduction to pyrodynamics, describing fundamental aspects of the combustion of energetic materials, while the second part highlights applications of energetic materials, such as propellants, explosives and pyrolants, with a focus on the phenomena occurring in rocket motors. Finally, an appendix gives a brief overview of the fundamentals of aerodynamics and heat transfer, which is a prerequisite for the study of pyrodynamics.

A detailed reference for readers interested in rocketry or explosives technology.

ABOUT THE AUTHOR

Prof. Kubota works as scientific advisor at the National Institute of Industrial Science and Technology (Tsukuba, Japan). In 1973 he received his Doctorate from Princeton University, majoring in "Solid Propellant Combustion" and "Rocket Propulsion including Ducted Rocket Engine". During his career he was Director of the Third Research Center of the Technical Research and
Development Institute (TRDI, Japan Defense Agency), which is responsible for aircraft and missile research. Afterwards, Prof. Kubota held a position as Senior Research Scientist in the Propellant Combustion Laboratory at Asahi Kasei Chemicals (Japan).

**NEW TO EDITION**

Newly developed propulsion systems such as ducted rockets, pulse motors and impulse thrusters as well as pyrolants, a new class of materials, are covered in detail.

The original nine chapters have been completely revised and another six have been added: Formation of Energetic Pyrolants, Combustion Propagation of Pyrolants, Emission from Combustion Products, Transient Combustion, Rocket Thrust Modulation, and Ducted Rocket Propulsion.

New appendices on flow field dynamics and shock wave propagation have been added.

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