
PREFACE

There is an opinion that the contemporary physics of combustion and detonation has transformed from a basic to applied science since it is mainly focused on solving engineering problems (design of effective furnaces and combustion chambers, development of new materials, etc.). Actually, the physics of combustion and detonation gave to mankind a vast diversity of devices and technologies that have been exploited for many years, forming an illusion of a comprehensive basic knowledge of the nature of associated phenomena. Nothing to say that the state of basic knowledge in the physics of combustion and detonation, like in many other fields, is quite far from ideal, and further progress requires meticulous and systematic research.

During the period from 1998 to 2008, the U.S. Office of Naval Research* (ONR) and the Russian Foundation for Basic Research (RFBR) have jointly sponsored six international colloquia on detonations, in particular, those aspects of detonations that are directly relevant to the development of pulse and continuous detonation engines.

In 2006 and 2008, the 5th and 6th International Colloquia on Pulsed and Continuous Detonations have been organized in Moscow, Russia, with active response of the international scientific community. This volume contains the selected papers presented at these conferences. The papers were revised and thoroughly edited. All the material in the volume is subdivided to five topical parts: (1) Fundamentals of Combustion; (2) Fundamentals of Deflagration-to-Detonation Transition; (3) Fundamentals of Detonation; (4) Pulse Detonation Engines; and (5) Continuous Detonation Engines. In general, the book provides an overview of the state-of-the-art in combustion (deflagration) and detonation physics and chemistry as well as in application of detonation to propulsion. Extended up-to-date references as well as authors' affiliations are added so that further information can be readily obtained. To make reading more convenient, an author index is provided at the end of the book. The volume is prepared as a reference for practicing engineers, research scientists working in the field of combustion and propulsion, and graduate students studying the corresponding disciplines.

This volume is the result of hard work of several persons, and we appreciate their valuable contributions. First of all, we acknowledge the assistance given

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Special thanks are due to Academician A. A. Berlin, Academician A. G. Merzhanov, and Prof. S. A. Tsyganov for their valuable contribution to the organization of the Colloquium. We thank the authors for their time and effort in preparing full manuscripts of their papers and the sponsoring agencies for their financial support. We hope that this volume will serve as a useful up-to-date addition to the literature on detonation and propulsion.

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