



The Scramjet Engine: Processes and Characteristics (Cambridge Aerospace Series)

By Corin Segal



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The renewed interest in high-speed propulsion has led to increased activity in the development of the supersonic combustion ramjet engine for hypersonic flight applications. In the hypersonic regime the scramjet engine's specific thrust exceeds that of other propulsion systems. This book, written by a leading researcher, describes the processes and characteristics of the scramjet engine in a unified manner, reviewing both the theoretical and experimental research. The focus is on the phenomena that dictate the thermo-aerodynamic processes encountered in the scramjet engine, including component analyses and flowpath considerations; fundamental theoretical topics related to internal flow with chemical reactions and non-equilibrium effects, high-temperature gas dynamics, and hypersonic effects are included. Cycle and component analyses are further described, followed by flowpath examination. Finally, the book reviews the current experimental and theoretical capabilities and describes ground testing facilities and computational fluid dynamics facilities developed to date for the study of time-accurate, high-temperature aerodynamics.

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Editorial Review

Review

"...Segal has done a commendable job of providing a needed introductory book on the subject of scramjets. In addition to providing an excellent reference for the engineer beginning his/her work on scramjets, the book provides a good update on the improvements in the state of the art in the last 10 years. As such, it is deserving of a place on every scramjet engineers bookshelf, particularly those interested in details relating to supersonic combustion. " - AIAA JOURNAL

About the Author

Corin Segal has been a member of the faculty at the University of Florida in the Mechanical and Aerospace Department since completing his Ph.D. at the University of Virginia. He leads research in the Combustion and Propulsion Laboratory. Prior to his graduate studies Dr Segal spent over eleven years in the aerospace industry as a senior aerodynamicist, project manager, and as a leader of the technical bureau. His current research covers a range of topics including mixing and combustion in high speed flows, supercritical mixing, high pressure combustion and cavitation. Results of his group's research have appeared in national and international publications. He is an associate editor of the AIAA Journal of Propulsion and Power and an Associate Fellow in the AIAA.

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