



## Modeling Explosions and Blast Waves

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### Review

Prof. K. Ramamurthi taught a course on “**Explosions and Safety**” at the Department of Mechanical Engineering, IIT, Madras from 2006. A book entitled, “**Explosions and Explosion Safety**” was written by him based on the lecture notes. He modestly felt that the book had a few short comings and hence penned a comprehensive book entitled, “**Modeling Explosions and Blast Waves**”. This is similar to the text book on “**Combustion and Mass Transfer**” with multiple choice questions, authored by Prof. D. B. Spalding, Imperial College London, published by Pergamon Press in 1979. The 20-chapter book was the out-come of a series of 20 lectures delivered to the undergraduate students of Imperial College, London. Both the books are not requiring computer aid to absorb the material.

The book on, “**Modeling Explosions and Blast Waves**” contains 14 well written chapters reflecting the teaching abilities of Prof. Ramamurthi. The subjects like flames and combustion and reactive gas dynamics do not have coverage in undergraduate courses in our country. Partial coverage is available for the persons opting to study the subjects under thermal engineering curriculum for graduate courses. Only a few persons study these subjects at the PhD level, if required in their theme of research. Therefore, it is a difficult task to motivate the student community to study subjects like explosions and blast waves with prerequisite knowledge of flames, combustion, reactive gas dynamics, dispersion of gases etc. However, Prof. Ramamurthi succeeded in driving the importance of these subjects through a lucid presentation in Chapter 4 (**Energy Release and Rate of Energy Release**), Chapter 5 (**Thermal Theory of Explosions**), Chapter 6 (**Propagation of Reaction Front : Detonation, Deflagration and Quasi detonation**), Chapter 7 (**Formation of Flames and Detonations in Gaseous Explosives**), Chapter 13 (**Atmospheric Dispersion of Flammable Gases and Pollutants**). These chapters are very essential for the subsequent study of the concepts involved in blast waves and explosions presented in the book.

The highlight of this book is the inclusion of the information related to accidental explosions (**9 case studies; Chapter 1**), unconfined and confined explosions (**5 case studies; Chapter 9**) and major explosions and pollutions involving atmospheric dispersion (**4 case studies; Chapter 13**) though the theme of this book is on modelling.