



Fundamentals of Fire Phenomena

By James G. Quintiere

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Understanding fire dynamics and combustion is essential in fire safety engineering and in fire science curricula. Engineers and students involved in fire protection, safety and investigation need to know and predict how fire behaves to be able to implement adequate safety measures and hazard analyses. Fire phenomena encompass everything about the scientific principles behind fire behavior. Combining the principles of chemistry, physics, heat and mass transfer, and fluid dynamics necessary to understand the fundamentals of fire phenomena, this book integrates the subject into a clear discipline:

- Covers thermochemistry including mixtures and chemical reactions;
- Introduces combustion to the fire protection student;
- Discusses premixed flames and spontaneous ignition;
- Presents conservation laws for control volumes, including the effects of fire;
- Describes the theoretical bases for empirical aspects of the subject of fire;
- Analyses ignition of liquids and the importance of evaporation including heat and mass transfer;
- Features the stages of fire in compartments, and the role of scale modeling in fire.

Fundamentals of Fire Phenomena is an invaluable reference tool for practising engineers in any aspect of safety or forensic analysis. Fire safety officers, safety practitioners and safety consultants will also find it an excellent resource. In addition, this is a must-have book for senior engineering students and postgraduates studying fire protection and fire aspects of combustion.

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Editorial Review

Review

"...an excellent textbook for teaching or learning fire dynamics...comprehensive and useful..." (*Fire Technology*, October 2006)

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From the Back Cover

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About the Author

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Educated as a mechanical engineer, Professor Quintiere received a B.S. degree from New Jersey Institute of Technology (1962), and a M.S. (1966) and Ph.D. (1970) from New York University. His career in fire safety began in 1971 when he joined the National Bureau of Standards, now known as the National Institute of Science and Technology. He left in 1989, as Chief of the Fire Science and Engineering Division, to join the faculty of the Department of Fire Protection Engineering. Dr. Quintiere's research in fire has covered a wide range of topics including compartment fire behavior, fire induced flows, fire growth on materials and scale model studies. He is currently Chairman of the International Association for Fire Safety Science (IAFSS). He received the Department of Commerce Bronze Medal (1976) and Silver Medal (1982) as well as the Howard W. Emmons Lecture Award from the IAFSS in 1986. He has written over 75 journal publications and reports.

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