

SMOKE, DUST, AND HAZE

Fundamentals of Aerosol Dynamics

Second Edition

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This is the only modern text that focuses on aerosol dynamics, the study of the factors that determine the change in the distribution of aerosol properties with respect to size. It is the second edition of a well-received book first published in 1977. Professor Friedlander uses the aerosol dynamics approach to integrate a broad set of aerosol topics usually treated in an unconnected manner. These include stochastic processes, aerosol transport theory, coagulation, formation of agglomerates, classical nucleation theory, and the synthesis of ultra-fine solid particles. Both theory and related experimental measurements are covered. The book makes extensive use of scaling concepts and dimensional analysis and

emphasizes physical and physicochemical interpretations. The basic concepts are illustrated throughout the text by applications to air pollution control, the atmospheric sciences, microcontamination in the semiconductor industry, and the manufacture of aerosol products in industrial processes. The coverage has been significantly expanded to include the effects of turbulence on coagulation and gas-to-particle conversion and the formation of primary particles by the collision-coalescence mechanism. There are new chapters on the kinetics of agglomeration of non-coalescing particles and the fundamentals of aerosol reactor design. The chapter on the atmospheric aerosol has been completely rewritten within the aerosol dynamics framework.

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2. Particle Transport Properties

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