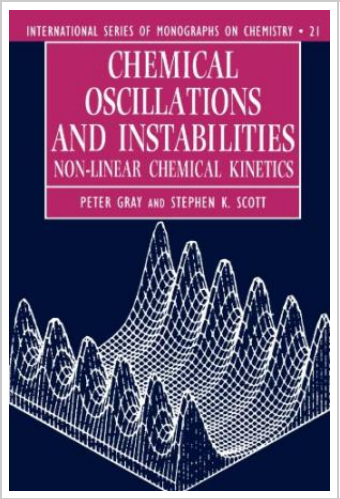

Chemical Oscillations and Instabilities: Non-linear Chemical Kinetics (Paperback)

By Peter Gray, Stephen K. Scott

Oxford University Press, United Kingdom, 1997. Paperback. Condition: New. Revised ed.. Language: English . Brand New Book ***** Print on Demand *****. Scientists in many fields are now expressing considerable interest in non-linearity and the ideas of oscillations and chaos. Chemical reactions provide perfect examples of these phenomena, as oscillating reactions, explosions, ignition, travelling waves, patterns, quasiperiodicity, and chaos are all features of chemical kinetics. Now available in paperback, this book introduces non-linear phenomena in chemical kinetics using simple model schemes. These models involve chemical feedback, such as chain branching, autocatalysis, and self-heating. The emphasis is on physical and pictorial representation, and on identifying those gross features which are essential. The experimental conditions under which such behaviour will occur can be predicted using simple mathematical recipes, and these are also included. The first part of the book begins with a discussion of long-lived oscillations for autocatalytic or exothermic reactions in closed vessels. Stationary states, bistability, and oscillations in continuous flow reactors and diffusion cells are then considered. This is followed by chemical wave propagation and by pattern selection and oscillations. Complex oscillations, quasiperiodicity, and chemical chaos, either forced or spontaneous, are introduced. Part 2 deals with real experimental systems, describing...

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