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BOOK REVIEW

Book Review: *Inhibition of Chain Reactions* by E.T. Denisov and V.V. Azatyan (London: Gordon and Breach, 2000, 337 pp.)

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In 2000, Gordon and Breach Science Publishers published a monograph *Inhibition of Chain Reactions* by E.T. Denisov and V.V. Azatyan, who are experts in chemical kinetics. The monograph is devoted to one of the most topical problems of the theory and practice of chain processes. The book considers a wide variety of different chain processes, including nonbranched chain reactions (radical polymerization, hydrocarbon cracking, and halogenation), the liquid-phase oxidation of organic compounds and polymers, and branched chain combustion and explosion. Numerous experimental data on the kinetics and mechanism of the inhibition of chain processes involving different chains are systematized and analyzed.

Each chapter of the monograph begins with a brief summary of the relevant part of the current theory of chain processes, to which the authors contributed greatly, and specific data on inhibition follow.

This international edition is somewhat extended compared to the previous Russian version[1]. The new edition includes findings of Denisov and his co-workers on the cyclic mechanisms of chain termination on antioxidants during the oxidation of polymers, olefins, and alcohols. A special section is now devoted to the theory and methods for the control of oxidation and stabilization. The elementary steps of the inhibition of liquid-phase hydrocarbon oxidation with due regard to up-to-date data are presented in more detail. The findings of V.V. Azatyan and co-workers are also important for the theory and practice. They suggest that, in contrast to common understanding, the branched chain mechanism is the determining factor in most gas-phase combustion processes not only at very low pressures, but also at atmospheric and higher pressures. This refers to the early stages of ignition, as well as to developed combustion, flame propagation, and transition into detonation. Earlier, the chain mechanism was usually neglected when considering gas combustion and explosion at an atmospheric pressure. Many specific features of these processes were explained taking into account the chain avalanche. The inhibition of combustion and explosion is discussed in view of the theory of nonisothermic chain processes developed by V.V. Azatyan.

A special chapter is devoted to the kinetic methods of using inhibitors in the studies of chain reaction mechanisms.

England traditionally has many experts in chain reactions and combustion processes. Therefore, the publication of Denisov and Azatyan's monograph in this countries acknowledges Russian achievements in this important field of science.

Undoubtedly, the monograph is of particular interest to those who study and apply inhibition in chain processes.

[1] Denisov, E.T. and Azatyan, V.V., *Inhibition of Chain Reactions*, Chernogolovka: Institute of Chemical Physics, 1997.

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