NEW BOOKS

Laser-Induced Discharge Phenomena

by Yu.P. Raizer, published by Consultants Bureau, New York, 1977, hard cover, 366 pp, price: $47.40.

Translated from the Russian edition “Lazernaya iskra i rasprostranenie razryadov” (Nauka Press, Moscow, 1974) by A. Tybulewicz and edited by G.C. Vlases and Z.A. Pietrzyk. The original Russian text has been corrected and the bibliography slightly updated for the present edition.

The book examines the subject of laser spark and propagation of discharges. The author describes the fundamentals and by-products of these phenomena and presents new concepts based on his own research, incorporating the theories of combustion and detonation. The book consists of two parts. The first part deals with optical-frequency breakdown in a prescribed electric field. The maintenance and generation of a dense plasma and the propagation of discharges in electromagnetic fields of intensity insufficient to cause the breakdown of a gas are discussed in the second part of the book. One of the most remarkable features is the close analogy between the processes of discharge propagation and the combustion and detonation of fuels. The attainment of thermonuclear temperatures and achievement of thermonuclear reactions as a result of the interaction between extremely powerful laser pulses and solid targets is not discussed in the book.

High-Power Lasers and Laser Plasmas

edited by N.G. Basov, Volume 85 of the Proceedings (Trudy) of the P.N. Lebedev Physics Institute, Academy of Sciences of the USSR, Moscow; translated from Russian by J.G. Adashko, New York University; published by Consultants Bureau, New York, 1978, paperback, 241 pp, price: $47.40.

Contents: 4 papers. “Stimulated Mandel’shtam-Brillouin scattering lasers” by V.V. Ragul’skii; “Compressed-gas lasers” by V.A. Danilychev, O.M. Kerimov, and I.B. Kovsh; “Experimental investigation of the reflection and absorption of high-power radiation in a laser plasma” by O.N. Krokhin, G.V. Sklizkov, and A.S. Shikanov; “Experimental study of cumulative phenomena in a plasma focus and in a laser plasma” by V.A. Gribkov, O.N. Krokhin, G.V. Sklizkov, N.V. Filippov, and T.I. Filippova.