



DO YOU NEED:

- a life time
- a cross section
- a reaction rate
- a transport coefficient

GAs—PHYsics— ORsay

GAPHYOR is a retrieval system on GAS PHYSICS including bibliographical references on:

- Atomic and molecular properties (energy levels, potential curves, life times, . . .)
- Photon collisions (absorption, multiphoton rates, . . .)
- Electron collisions with atoms and molecules
- Atomic and molecular collisions (transport cross-sections, charge transfer, dissociation, . . .)
- Macroscopic properties (viscosity, electron mobility, recombination, . . .)

GAPHYOR

UNIVERSITE DE PARIS SUD

BaYimer 212

91405 ORSAY-CEDEX-FRANCE

Circle No. 24 on Reader Service Card

begin the study of any specific subject in reactor safety.

HAROLD W. LEWIS
Department of Physics
University of California
Santa Barbara

Industrial Applications of Lasers

J. F. Ready
588 pp. Academic, New York, 1978.
\$28.50

This book, a survey of the present use of and future possibilities for lasers in industry, is intended for people contemplating the use of lasers in an industrial application. As such, it is a technical report on the status and direction of laser applications in the late 1970's. The book was written by John F. Ready, a scientist at the Honeywell Corporate Research Center, and author of an earlier laser monograph, *Effects of High Power Laser Radiation* (Academic, 1971). The comprehensive survey touches nearly every application that has any industrial potential.

After a necessarily brief review of lasers and their properties, Ready discusses their care and maintenance. I know of no other single repository of useful information on damage and deterioration in lasers and on the care and maintenance of the devices. This chapter is well done. In the succeeding chapter on laser safety Ready takes a common-sense attitude that is needed in these days of intimidating light shows and draconian laser-safety rulings. Chapters on laser measurement are informative and relatively comprehensive because a good deal of the basic research and development has been done. The same comments apply to the chapters on material processing, which is Ready's forte. The sections on holography and information-related applications suffer by comparison. While Ready asserts the importance of optical-fiber communications, he does little to give the reader a feel for the limitations and difficulties, and the important parameters of current systems. Ready is not at fault, because an enormous acceleration in development in this field occurred during the book's production.

The text also contains a short chapter on recent work on chemical applications of lasers. Ready's statement on Raman spectroscopy is somewhat misleading in that he asserts that the "variety of laser wavelengths makes it possible to carry out Raman Spectroscopy while avoiding interfering absorption bands. With a tunable laser, the excitation frequency can be tuned to produce a larger Raman signal." In fact, it is excitation into those absorption bands that produces the enhancement. It is fluorescing bands that can

(sometimes) be avoided by a judicious choice of laser wavelength.

While Ready intended "to make the book reasonably self-contained," he did not extend this concept to the various chapters by including back references to concepts explained earlier in the text. Therefore, a reader may not be able to dip into a particular chapter of interest without a good deal of thumbing through the index and the earlier chapters of the book. In some cases, however, even this strategy cannot guarantee success. Ready mentions a retroreflector in chapter 8 without explanation but describes it in chapter 10 (and later in the chapter explains it again in a footnote). Certain passages, particularly those on semiconductor lasers, are repetitious, and other passages mention without explanation a number of uncommon concepts (getters, dithering servo, spatial filtering, flatpacks and ECM machines, for example).

This book is appropriate for those outside a particular field of laser application who want to gain an elementary understanding of that field. As such, it will be a useful addition to industrial and university libraries. The text is not, however, useful for a designer of laser systems to consult for answers. It is a detailed report card on the 18-year-old laser as it comes of age. John Ready's book gives the laser impressive marks.

DONALD C. O'SHEA
School of Physics
Georgia Institute of Technology
Atlanta

Beyond the Moon

P. Maffei
377 pp. MIT, Cambridge, 1978 (first Italian edition, 1973). \$12.50

Paolo Maffei tells us that his new book *Beyond the Moon* is the story of a voyage through space. He means to show us the wonders of the universe by starting from the Moon (where we have already voyaged via Apollo) and visiting in turn each planet, the stars, star clusters, galaxies, clusters of galaxies, and the universe itself as a cosmological whole. While he claims that the book is not quite a textbook of astronomy, it is hard to see it as anything else. In reality, it is little more than a catalog of astronomical facts, laid out in the usual format of introductory textbooks, but lacking the elegance that characterizes many of the other texts that have appeared in recent years.

If the reader should casually page through the book, he will find, for example, that Mercury has a weak magnetic field (0.0037–0.0070 gauss); Venera 9 and Venera 10 landed 2200 km apart; the light curve of β Lyrae eclipses every 12 days, 22 hours, 22 minutes; Mira Ceti is 163 light-years from us; and by June 1970, 1603