concludes with a set of exercises and worked out solutions, corroborating the author's statement that the book is self-contained. I am glad with my pay for refereeing prof. Chattot's book: the book itself.

Barry Koren
Centre for Mathematics and Computer Science (CWI)
Amsterdam
The Netherlands

10.1016/S0997-7546(03)00004-9

Optical Measurements Techniques and Applications, 2nd edition
by Franz Mayinger and Oliver Feldmann (Eds.) (Springer, 2001) ISBN 3-540-66690-7

When I started out in fluid dynamics and proposed to buy expensive fotonic equipment, one of my colleagues told me "…but G.I. Taylor could do fluid dynamics with a rubber band…". Well, *we* cannot, and with the advent of the laser and digital image acquisition, instrumentation in fluid dynamics has reached maturity. Optical techniques hold the promise of time-resolved full 3D images of the velocity field and quantitative 3D information of the species concentration and temperature in reacting flows.

Since the invention of laser-Doppler anemometry, the number of optical techniques for fluid dynamics has grown tremendously. Some of these techniques actually require fluid dynamicists to be versed in molecular spectroscopy. The present range of applications is so wide that it is good to have an overview over what is possible with lasers, monochromators and cameras. Such an overview is precisely provided by this book. This new second edition followed the first one published in 1996. It has been updated, but some of the more modern techniques are still missing.

Separate teams of specialists have written the chapters on different optical techniques. Each chapter starts with the basics and ends with a few real-life applications. The different chapters can be read separately, with the consequence that some subjects (such as holography) are introduced several times; it did not bother me. The described techniques include holographic interferometry, laser-Doppler velocimetry (LDV), dynamic light scattering, Raman scattering, laser induced fluorescence, absorption spectroscopy, thermography and particle image velocimetry (PIV). The book further contains contributions on tomography and digital image processing.

The reason a fluid dynamicist should read this book is not because of the chapters on LDV and PIV, which add little to what most of us already know. In fact, most of the LDV chapter is devoted to the extraction of turbulence statistical quantities from velocity records; the argument being that LDV systems come as black boxes these days and we better understand what to do with their signals. Instead, the prime reason a fluid dynamicist should read this book is to get acquainted with the spectroscopic techniques that give access to chemical species concentration and temperature. I especially liked the excellect chapters on laser-induced fluorescence and Raman spectroscopy. I also enjoyed reading the precise and well-written description of dynamic light scattering for measuring molecular diffusivities.

I realize that it is difficult to cover the rapidly expanding field of photonics, but I missed a discussion of techniques that made inroads only recently, such as cavity ringdown spectroscopy for absorption measurements, and molecular spectroscopy techniques for velocimetry such as global Doppler velocimetry or molecular tagging velocimetry.

Read this book if you are interested in new optical techniques that may become part of your experiment. Do not buy it because you want to see the CD ROM that has been advertised with it. The CD has a few movies of explosions and contains a few color illustrations that should have been printed in the book anyway.

Willem van de Water
Physics Department
Eindhoven University of Technology
P.O. Box 513
5600 MB Eindhoven
The Netherlands

10.1016/S0997-7546(02)00010-9
