

chapters, entitled "Cooling and Cryogenic Equipment," "Cryogenic Design Aids," "Experimental Techniques and Special Devices" and "Thermometry." Within each of these chapters are several more-specialized articles, written by individuals or groups, that discuss separate subtopics quite extensively. It is difficult to encompass all the techniques used in low-temperature physics, and this book makes no claims to doing so. What it does discuss, it discusses in detail: It even goes so far as to give at the end of each section such useful tips as a list of reliable manufacturers in this area and what to expect from each of these suppliers as to delivery, price and so forth.

I think this book belongs in every lab that uses cryogenics, and in most condensed matter physics labs. Investigators should use it as a reference source when thinking about how to design a new experiment. Most of the articles are very easy to read, begin at the beginning and lead the reader through to fairly sophisticated techniques. There are a couple of exceptions, but in general it is straightforward to find the subject of one's interest quickly, and learn the tricks of a successful laboratory.

ROBERT C. DYNES
AT&T Bell Labs,
Murray Hill, New Jersey

Neutron Scattering at a Pulsed Source

Edited by R. J. Newport,
B. D. Rainford and
R. Cywinski

Adam Hilger, Bristol, UK
(US dist. AIP, New York), 1988.
413 pp. £32.50 (\$65.00) hc
ISBN 0-85274-388-1

Neutron scattering is by now established as an essential tool in condensed matter, materials science and certain areas of chemistry and biology. Indeed, it is hard to imagine the progress in these fields over the past 20 years taking place without the detailed microscopic information that neutron diffraction, small-angle neutron scattering and inelastic neutron scattering have been able to provide. However, unlike many comparably important research techniques, which are available in the typical university or industrial laboratory, neutron scattering has to be carried out at national or international research facilities. Thus it has always seemed somewhat mysterious and distant to the average graduate student, and often to more senior staff and faculty as well; this is even more

true for researchers in the average industrial research laboratory.

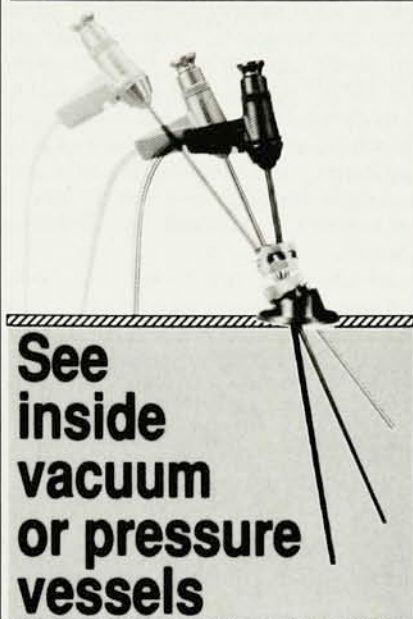
It is therefore gratifying to find this book, the result of a summer school organized at the Rutherford Appleton Laboratory in 1985. Aimed at the researcher with little or no experience of the theory or practice of neutron scattering, the book captures the flavor of a hands-on workshop, supplying many details of practical importance for carrying out experiments and analyzing data. As the title implies, it is geared to researchers intending to use a pulsed spallation neutron source rather than a nuclear reactor. Such neutron sources are still relatively novel to the scientific community. Because the instrumentation is rather different from what one generally finds at reactor-based neutron sources, involving time-of-flight rather than more conventional crystal spectrometry, there is some point to documenting its principles and use in books such as this.

The reverse side of the coin is that the informality of workshop lectures (which is often compensated for by follow-up detailed discussions, question-and-answer sessions and hands-on demonstrations) makes for a rather bare and sometimes even a bit confusing presentation when simply published more or less verbatim for posterity. In particular, several of the chapters suffer from many careless errors, typographical and otherwise; poor cross-referencing, and generally poor editing. This is particularly unfortunate in a book aimed at beginners.

The introductory section by Michael Gunn is devoted to a discussion of neutron scattering formalism. The approach taken is based mainly on plausibility arguments from a semi-classical picture of waves interacting with static or dynamic scattering centers. This may be a more palatable physical picture of the scattering process for the beginner. The quantum mechanical theory is then introduced, but the full power and elegance of the formal theory in terms of operators and correlation functions is not developed, perhaps because it was judged too advanced for the intended audience. There is a brief discussion of magnetic scattering, total reflection of neutrons and even scattering from fractals. A list of references is unfortunately missing from this chapter.

The chapter on neutron scattering instrumentation by Colin Windsor looks like a 15-page condensation of his impressive 400-page *Pulsed Neutron Scattering* (Wiley, New York,

RVI we've made it a science



See inside vacuum or pressure vessels
Remote Visual Inspection (RVI) with Olympus rigid and flexible scopes lets you see magnified, brilliantly lighted images inside vessels under vacuum or high pressure. You will be able to observe and record objects and phenomena, at close range, that you never could before.

Pressures as high as 2,250 psi (155bars).
Vacuums to 10^{-6} tors and ultrahigh vacuums to 10^{-9} tors. Temperatures to 1000°C.

Integrated illumination. Fiberoptic light guides inside scopes carry cool, brilliant illumination to the site. Lighting is even and high Kelvin temperature. Strobe light, ultraviolet, infrared and other special wavelengths are also available.

Image analysis. Scope images can be seen on a video monitor for observation by groups and for documentation. Olympus systems let you digitize color images and perform analysis, including measurement to one part in 1024, gray scale histograms, image enhancement, particle counts, area calculations, and much more.

Gimbal access port lets you insert the rigid scope deep or shallow and sweep through a wide arc for complete scanning of chamber.

For more information, write or call today.

Olympus Corporation,
Industrial Fiberoptics Division,
4 Nevada Drive, Lake Success, NY 11042
516-488-5888, FAX 516-222-0878.

OLYMPUS
INDUSTRIAL

Circle number 98 on Reader Service Card

1981) and suffers somewhat from extreme terseness. The chapter by Elizabeth Lindley and Jerry Meyers, on experimental data corrections, may seem elementary but its detailed information will probably be useful to beginning practitioners. There is also an interesting discussion of the maximum-entropy method by Geoffrey Daniell.

In the last section of the book various experts describe scientific ap-

plications in different areas. The chapter by William David on powder neutron diffraction, with its detailed tour through the Rietveld profile refinement method and comprehensive list of references, appears to be particularly useful for the novice. There are chapters on single-crystal diffraction, liquids and amorphous solids, small-angle scattering, biological applications, neutron reflectometry, various applications of inelastic scat-

tering, and a particularly nice chapter on magnetic scattering by Brian Rainford.

In spite of its shortcomings, this book should be a useful addition to the library of any institution that has a research group carrying out neutron scattering research at a spallation source.

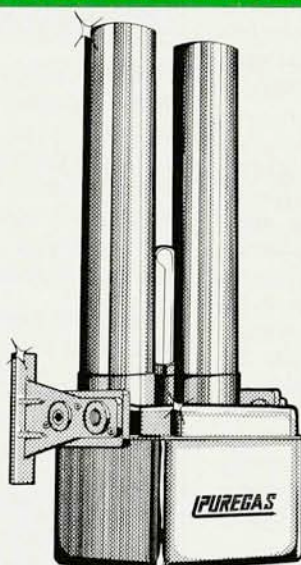
S. K. SINHA

Exxon Research and Engineering
Annandale, New Jersey

PUREGAS®

HEATLESS/REGENERATIVE AIR DRYERS A SOURCE OF ULTRA-DRY AIR

- Analytical instrument purging
- Pneumatic instrumentation
- Gas monitoring
- Moisture analyzing
- Ozone generation



- Pollution monitoring
- Gas chromatography (FID)
- Electronic circuit shock testing
- Infrared analyzing
- Environmental chambers

Puregas is the name you should know when you are looking for a source of ultra-dry air for your OEM product, pneumatic tools or instrumentation. Because Puregas has been a leading supplier of heatless/regenerative air dryers for more than 3 decades. All are compact, have solid state DC components, and have a track record of reliability and ruggedness.

If you need an economical and worry-free source of dry air, call the experts at Puregas. We can custom-fit an air dryer to your product.

FREE



This 24-page booklet will show you how to get really dry air the easy, inexpensive way. Write or call for this valuable book now!

PUREGAS

P.O. Box 666, 5600 West 88th Avenue
Westminster, Colorado 80030
Phone: 303/427-3700 FAX: 303/427-3472

Circle number 99 on Reader Service Card

NEW BOOKS

Elementary-Particle Physics

CP Violation. *Advanced Series on Directions in High Energy Physics 3.* C. Jarlskog, ed. World Scientific, Singapore (Teaneck, N. J.), 1989. 723 pp. \$84.00 hc ISBN 9971-50-560-6. *Compilation*

Glueballs, Hybrids and Exotic Hadrons. *AIP Conference Proceedings 185; Particles and Fields 36.* Proc. Wksp., Upton, N. Y., August 1988. AIP, New York, 1989. 729 pp. \$76.00 (\$60.80, AIP members) hc ISBN 0-88318-385-4

High-Energy Spin Physics, Vols. 1-2. *AIP Conference Proceedings 187; Particles and Fields 37.* Proc. 8th Intl. Symp., Minneapolis, Minn., September 1988. K. J. Heller, ed. AIP, New York, 1989. 1605 pp. \$149.00 (\$119.20, AIP members) hc ISBN 0-88318-387-0

Low Temperature Detectors for Neutrinos and Dark Matter II. Proc. Wksp., Annecy, France, May 1988. L. Gonzalez-Mestres, D. Perret-Gallix, eds. Editions Frontières, Gif-sur Yvette, France, 1988. 518 pp. 410 FF (\$63.00) hc ISBN 2-86332-059-9

Physics and Astrophysics of Quark-Gluon Plasma. Proc. Conf., Bombay, February 1988. World Scientific, Singapore (Teaneck, N. J.), 1988. 698 pp. \$84.00 hc ISBN 9971-50-553-3

Physics of Particle Accelerators, Vols. 1-2. *AIP Conference Proceedings 184.* Proc. Sch., Batavia, Ill., July 1987; Ithaca, N. Y., August 1988. M. Month, M. Dienes, eds. AIP, New York, 1989. 2310 pp. \$177.50 (\$142.00, AIP members) hc ISBN 0-88318-384-6

The Physics of the Quark-Gluon Plasma. Proc. Sch., Lisbon, December 1987. J. D. De Deus, S. C. Ramos, eds. World Scientific, Singapore (Teaneck, N. J.), 1988. 321 pp. \$52.00 hc ISBN 9971-50-570-3

Proton-Antiproton Collider Physics. *Advanced Series on Directions in High Energy Physics 4.* G. Altarelli, L. Di Lella, eds. World Scientific, Singapore (Teaneck, N. J.), 1989. 404 pp. \$78.00 hc ISBN 9971-50-562-2. *Compilation*

Supernova 1987A, One Year Later; Results and Perspectives in Particle Physics. *Les Rencontres de Physique de la Vallée d'Aoste.* Proc. Mtgs., La Thuile, Italy, February 1988. M. Greco, ed. Editions Frontières, Gif-sur-Yvette, France,