

finer masses while delivering one and one half to two times the mean breast dose produced by the film-screen technique. Thermography is characterized as an investigational tool with severe limitations in the detection of breast cancer, not the least of which is its lack of reliability in detection of the minimal lesions, those most amenable to successful therapy. Diagnostic ultrasound, its primary attribute being the absence of ionizing radiation, is also shown to be limited by both low spatial resolution and nondetectability of microcalcifications; however, it is the only modality capable of separating fluid-filled from solid masses.

The information on XERG electron breast radiography is primarily of technical interest. TCT mammography appears to be useful in evaluation of dense or dysplastic breast tissue, but its high cost and high radiation dose render it inappropriate for screening. The future direction and necessary improvement of each current imaging modality are addressed by the editors as well as the author(s) of each chapter. Nuclear magnetic resonance imaging is not referenced.

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X-RAY FLUORESCENCE (XRF AND PIXE) IN MEDICINE. R. Cesaro, Ed. Rome, Field Educational Italia, 1982, 239 pp, 18,000 lira

This book is comprised of the 16 papers presented at a workshop on x-ray fluorescence (XRF) along with a round table discussion by the participants from Italy, Germany, Sweden, and the United States. It opens with an extensive, detailed, and well-written review of the instrumentation and techniques for XRF with thin biological

samples, concluding that nanogram amounts are readily detectable in almost any element of $Z \geq 20$. Several advanced techniques for in vitro excitation analysis, including polarized photon excitation and recent improvements in nucleonic counting systems, are discussed in the second paper. Papers on in vivo analysis of bone, blood, kidney, and thyroid are included as well as are papers on particle-induced x-ray emission (PIXE), a technique for simultaneous trace element analysis at high efficiency for all elements with $Z > 15$.

This is a fine reference book on the general subjects of XRF and trace-element analysis in medicine, because it contains good references, and it was published quickly. The papers, reproduced from camera-ready copy, were published as submitted, but the clarity and continuity indicate that extensive efforts were made before the meeting in preparation and coordination of the work. It should be of interest to the general medical community as well as to specialists in XRF because of the importance of trace elements in the functioning and malfunctioning of our bodies. It also contains interesting papers on environmental, industrial, and forensic analysis and plans for future developments in the use of XRF in many areas. Although these plans are specifically related to the needs of Italian scientists and physicians, the necessity for centralized instrument development laboratories, coordinated expansion, use of large-scale accelerator facilities, and the development of more dedicated systems to be used on site are of interest to a universal audience.

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BOOKS RECEIVED

- The Secret of Life; Perspectivism in Science.* J.I. Jacobson. New York, Philosophical Library, 1983, 121 pp, \$10.00
- Bone Scintigraphy.* E. Silberstein. Mount Kisco, Futura Publishing Co., 1984, 409 pp, \$67.50
- Fundamentals of Nuclear Pharmacy.* G.B. Saha. New York, Springer-Verlag, 1984, 395 pp, \$29.50
- Clinical Sonography; A Practical Guide.* R.B. Sanders. Boston, Little, Brown, and Co., 1984, 395 pp, \$26.95
- Animal Models in Radiotracer Design.* R.M. Lambrecht, W.C. Eckelman, eds. New York, Springer-Verlag, 1984, 234 pp, \$32.50
- Radiation Protection of the Patient in Nuclear Medicine.* W.A. Langmead. Oxford, Oxford University Press, 1984, 98 pp, \$13.95
- Nuclear Radiation: Risks and Benefits.* E. Pochin. Oxford, Oxford University Press, 1984, 197 pp, \$32.50