

gram information between those who require organs and tissue for clinical and research purposes, to discuss examples of cooperative local and regional donation programs, and to define the needs for further efforts in order to make the program practicably feasible.

Implementation of the Act by the use of simplified instruments of donation (the donor card) and by the coordination and establishment of national, regional, and local groups to provide information and an organizational framework for matching recipient need and donor availability have been the major concerns in the past year.

The Ad Hoc Committee consisted of Dr. R. E. Stevenson, Union Carbide Corporate Research Department, chairman; and Drs. J. E. Murray, Peter Bent Brigham Hospital; W. J. Burdette, M.D. Anderson Hospital; M. Head, George Washington University; K. W. Sell, Naval Medical Research Institute; and A. M. Sadler, Jr., and Mr. B. L. Sadler, National Institutes of Health.

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Courses

Disorders of Lipid Peroxidation, Indianapolis, Ind., 10-12 June. Is intended for medical research workers, chemists, and biologists. The basic goal is to present an overview into the significance of lipid peroxidative changes in medicine and biology. Lectures will be presented on peroxidative changes seen in vivo and in vitro, molecular lesions induced by free radicals, induction of lipofuscin in laboratory animals, pigment accumulation and aging, chemical and enzyme properties of lipofuscin and ceroid isolated by subcellular techniques, disease models for aging. The demonstration portion of the course will involve techniques for following lipid peroxidation and measurement of changes in biological molecules. Specific techniques for inducing lipopigments, automatic scanning microscope techniques for tissues, isolation techniques for lipopigments, discussion of diseases involving lipopigment accumulation, and current approaches to therapy in neuronal ceroid lipofuscinosis. *Registration fee: \$150.* (Dr. A. N. Siakotos, Department of Pathology, Indiana University Medical Center, Indianapolis 46202)

Dynamical Astronomy, Austin, Tex., 8 June-3 July. The first 2 weeks will be dedicated to introductory and advanced courses in general celestial mechanics and dynamical astronomy. The third week is dedicated to orbit determination and the fourth week to optimization and guidance.

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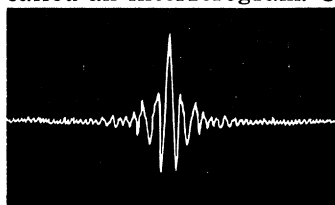
Number 3 of a Series

Signal Averaging...

Principles and Practices

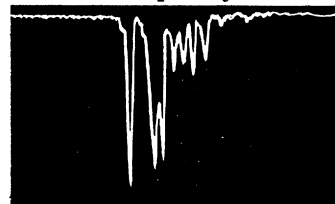
Exploiting Fellgett's Advantage!

Fourier transform spectroscopy, when combined with signal averaging, has applications that range from petroleum geology to astronomy. A description of an interference spectrometer may serve to illustrate some of the basic advantages of Fourier transform techniques. Light entering such a spectrometer will experience constructive or destructive interference at a beam splitter before reaching the detector. If the light is monochromatic and if a mirror is moved linearly in time, the output of the detector will be a sinusoidal function whose frequency is proportional to the wave number of the original light. If the incoming light is polychromatic, the output of the detector will be a mixture of sinusoids usually called an interferogram. Usually interferograms must be averaged to improve the signal-to-noise ratio. Although the averaged interferogram contains all the information of a conventional scanning spectrophotometer, the presentation of the data is not in a form from which spectral lines are easily recognized.



A mathematical transformation of this interferogram data into the frequency domain is clearly called for. This is where Fourier transform techniques come in. A recently developed algorithm for computing this transformation is called the FAST FOURIER TRANSFORM and has made handling large amounts of data economically feasible, both from a cost and time viewpoint. Once data are transformed into the frequency domain via this technique they are easily interpreted by the spectroscopist. Overall quantum efficiencies of 25% are possible at visual wave lengths using this technique.

On the other hand, a grating or prism type spectrometer measures the intensity of only one frequency element at a time. Consequently, if the resolution is to be 1%, 99% of the light is wasted and the overall quantum efficiency becomes only 0.25%. The gain in efficiency, called Fellgett's advantage for interference spectrometry, can be used to improve the speed and/or sensitivity of measurements.

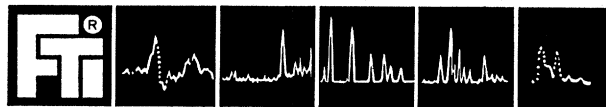


This same line of reasoning can be extended to other spectroscopic techniques. In NMR, for example, the sample being studied can be exposed to all RF frequencies simultaneously and the resulting free induction decay curve is then the analogous "interferogram".

Fabri-Tek Instruments offers a complete system for Fourier Transform analysis. The Fabri-Tek system can be connected directly to an experiment, data gathered and the results computed almost immediately. This allows the experimenter to interact directly with his experiment which can be very important. The accuracy and resolution of the Fabri-Tek Fourier system compares very favorably with older, more expensive, and slower methods.

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Deadline for application: 9 May. Limited funds are available to assist with travel and living expenses for university applicants. There are no charges for university or government participants. (Professor Victor Szebehely, Department of Aerospace Engineering and Engineering Mechanics, 227 Taylor Hall, University of Texas at Austin, Austin 78712)

Biological Electron Microscopy, Los Angeles, Calif., 1–13 June. This course is designed for professional and laboratory personnel desiring knowledge and experience in tissue preparation for examination with the electron microscope. No prior skill in electron microscopy is required. Limited to 12 participants. *Fee:* \$300. (Dr. Robert F. Bills, Hancock Foundation, University of Southern California, Los Angeles 90007)

Communicating Technical Information, Cambridge, Mass., 24–28 August. Is designed to help in writing communications on technical subjects and to assist those responsible for supervising, coordinating, and editing. In addition to lectures on the principles that underlie successful communications, there will be discussion and debate and an opportunity for staff consultation on individual writing and editing problems. *Tuition:* \$300. (Director of the Summer Session, Room E19-356, Massachusetts Institute of Technology, Cambridge 021329)

Pathology of Laboratory Animals, Washington, D.C., 21–25 September. The curriculum will provide training for veterinarians and other scientists responsible

for recognizing and interpreting lesions in experimental animals and for the procurement and maintenance of animal colonies. Particular emphasis will be placed on interpreting natural diseases which may negate or interfere with experimental results of the suitability of the animal for experimental use. Military and civilian veterinarians and allied scientists are invited to apply. Early reservations are suggested. *Deadline for application:* 1 August. (Director, ATTN: MEDEM-PAD, Armed Forces Institute of Pathology, Washington, D.C. 20305)

Modern Statistical Methods, College Park, Md., 22–26 June. This course is intended for statisticians, scientists, engineers, operations analysts, computer scientists, applied mathematicians, and others who use statistics in their work and wish to acquire a better understanding of the recent developments in the field. The purpose is (i) to provide a comprehensive introduction to modern statistical methods with applications to both established and current practical problems of science and engineering, (ii) to expand an understanding of the relevance of mathematical tools to current statistical practices, and (iii) to project a broad, deep, modern point of view. A bachelor's degree or equivalent is required. [Conferences and Institutes Division (MSM), Center of Adult Education, University of Maryland, College Park 20742]

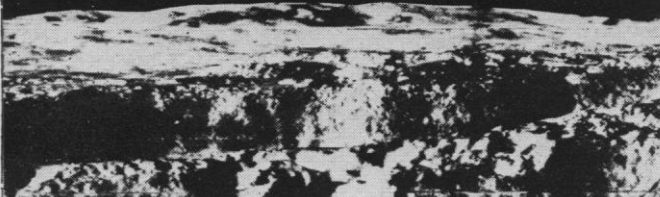
Corrosion, Philadelphia, Pa. 15–17 September. Five distinct 3-day courses on corrosion principles, practice, coating ma-

terials, application and water treatment. An educational opportunity for experienced personnel as well as beginner-staff, laboratory, maintenance, or operating personnel. (Liberty Bell Corrosion Course, Drexel University Evening College, Room 201, 32nd and Chestnut Streets, Philadelphia 19104)

Pathogenesis and Pathology of Infectious Diseases, Burlington, Vt., 27–31 July. This course is intended for microbiologists with advanced degrees, graduate students, and medical technologists with a background in diagnostic microbiology. An effort will be made to acquaint the participants with the lesions and clinical syndromes caused by common human pathogens in man. Current concepts of the pathogenesis of bacterial, viral, fungal, and parasitic diseases will be emphasized. Lodging will be supplied at a modest charge in college dormitories. *Registration fee:* \$50. (Dr. John E. Craighead, Department of Pathology, Medical Alumni Building, University of Vermont, Burlington 05401)

Probabilistic Models: Processes, Inference, and Decision Analysis, Cambridge, Mass., 24 August–4 September. This will be an intensive program on probabilistic models and modern procedures for decision-making under uncertainty. After a rapid review of introductory probability, program topics include probabilistic processes, dynamic programming, inference, utility theory, and decision analysis. (Director of the Summer Session, Room E19-356, Massachusetts Institute of Technology, Cambridge 02139)

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