



Jean Paul Mathieu

veloped for crystals, studying the modifications of the vibrational spectra related to changes of symmetry of the molecules or of their environment, studying their bandwidth and checking their intensity. The very precise measurements he made with Poulet of the intensities of the same band in different geometries in ZnS led them to discover that the electric field associated with longitudinal phonons in piezoelectric crystals was a possible source of Raman activity.

Mathieu played an important role in establishing Raman spectroscopy as a technique to understand the properties of matter and to characterize materials in physics, chemistry and later biology. His pharmaceutical training had taught him how to grow crystals, and whenever possible he would insist that he and his co-workers grow their own crystals to study.

Mathieu had an encyclopedic knowledge of classical physics and was a remarkably clear lecturer. He wrote many important textbooks for students, including a complete series on classical physics with Paul Fleury and a complete dictionary of physics with Fleury and Alfred Kastler.

Long before it became fashionable, Mathieu was a dedicated fighter for human rights, liberty and freedom. He was a *résistant* during World War II and later fought for the freedom of scientists, particularly in Eastern Europe and in the former Soviet Union.

Regretably, Mathieu never visited the US. Early in the McCarthy era, his request for a visa was denied, and he never reapplied.

Mathieu was known for his exceptional courtesy and hospitality to visitors to his laboratory. He was an intellectual in the best, classical

sense of the term: fluent in English and German, widely read in general literature as well as science, and extremely fond of chamber music. Transcending these qualities was his human and direct contact with colleagues and friends, for whom his influence will remain as an abiding and happy memory.

ROBERT PICK
HENRI POULET

*Université Pierre et Marie Curie
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Leo J. Neuringer

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Leo J. Neuringer, a highly successful research physicist and a pioneer and organizer of biomedical research, died of cancer on 4 May 1993. He was 64. In recent years Leo had been the leader of the molecular biophysics group and the director of the NIH Comprehensive NMR Center for Biomedical Research at the Francis Bitter National Magnet Laboratory at MIT.

Leo received his PhD in physics from the University of Pennsylvania in 1957. He then became a staff scientist at Raytheon, where he remained until 1963. His work at Raytheon included a comprehensive analysis of the performance of infrared detectors, growth of single crystals of GaP and GaAs, design and construction of superconducting magnets and basic experimental investigations of magnetotransport and magneto-optical properties of semiconductors and semimetals.

In 1963 Leo became a staff scientist at the Bitter Laboratory, where he worked until he retired, shortly before his death. During his first decade there he initiated and led a number of research efforts that took advantage of the lab's unique high-field facilities. Leo performed some of the earliest measurements and analyses of the effect of spin-orbit scattering on the upper critical fields of high-field superconductors. With Larry Kaufman he studied magnetic freezeout in InAs. With Ray Milward he studied far-infrared absorption due to photon-induced hopping in silicon. With Yaacov Shapira he did the first study of ultrasonic propagation in high-field superconductors. He initiated work on low-temperature thermometry in high magnetic fields, which was later expanded by Larry Rubin and

Howard Sample.

In the mid-1970s Leo changed the course of his scientific career, organizing and leading the nuclear magnetic resonance and biomedical research effort at the Bitter Lab. In this large effort Leo's many exceptional talents—leadership, energy and practicality—became even more apparent. He was able to create a major interdisciplinary research and technology center where researchers and students from leading hospitals and universities in the Boston area do biomedical studies in close proximity with designers and builders of large superconducting magnets for magnetic resonance imaging or of advanced nmr spectrometers. Under Leo's leadership pioneering studies were directed toward understanding the structure and function of biomolecules and cells.

Leo was an open and warm person. Enthusiastic, optimistic and inspiring, he acted as a mentor to many students and young scientists. He was a connoisseur of many aspects of Jewish culture, from which he derived considerable inspiration. His wisdom, humanity and enjoyable company will be remembered by the many people whose lives he enriched.

YAACOV SHAPIRA

Tufts University

Medford, Massachusetts

LARRY RUBIN

Francis Bitter National Magnet Laboratory

Massachusetts Institute of Technology

Cambridge, Massachusetts

DAVID HOLTZMAN

Children's Hospital

Boston, Massachusetts

Wallace B. Miner

Wallace Miner died on 10 April 1993 in DeKalb, Illinois at the age of 84.