

Robert A. Lodder, Ph.D.
President



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Dr. Lodder is currently serving as President of Spherix Incorporated. Dr. Lodder has conducted mathematical studies aimed at solving the "false-sample" problem in thought-like operations on parallel processors. The parallel processing concepts have been extended to analytical instrumentation itself in the form of systems for hyperspectral integrated computational imaging (HICI), integrated sensing and processing (ISP), and magnetohydrodynamic acoustic-resonance near-infrared spectrometry (MARENIR). The results of these studies have been applied to a number of different analytical problems, including near-infrared imaging, pharmaceutical quality control, and the detection of product tampering in foods and pharmaceuticals. These studies have also led to progress in noninvasive methods for analyzing complex biological samples. The new imaging technology is now being applied to in vivo studies of the role of selected proteins and lipids in atherogenesis, and has been used in three-dimensional imaging for astrobiology.

Dr. Lodder is also a professor of Pharmaceutical Sciences at the College of Pharmacy, University of Kentucky Medical Center. Dr. Lodder holds joint appointments as a professor in the Department of Electrical and Computer Engineering, and the Division of Analytical Chemistry of the Department of Chemistry at Kentucky. He serves on the editorial board of the *Journal of Pharmaceutical Innovation*, and as editor in chief of the astroanalytical chemistry and astrobiology journal *Contact in Context*. Dr. Lodder is a first-prize winner in the 1990 international *IBM Supercomputing Competition*, as well as a winner of a National Science Foundation *Young Investigator Award*, the *American Society of Agricultural Engineers Paper Award*, a *Buchi NIR Award*, the *Tomas Hirschfeld Award in Near-IR Spectroscopy* (PittCon), a *Research and Development 100 Award*, and the *Orville N. Green Award* (SETICon). Dr. Lodder is author of 94 publications and over 250 presentations.

Dr. Lodder has served on several NIH study sections and in NSF, NIH and DARPA workshops. He was appointed by the Food and Drug Administration to serve on their Process Analytical Technologies (PAT) subcommittee, which aims to revolutionize the pharmaceutical industry by replacing the GMP standards under which drugs have been released for the past 40 years with new, science-based PAT methods. Dr. Lodder has served as both chair and vice chair of the local section of the American Chemical Society, and Treasurer of the local AAUP. Dr. Lodder has been twice elected to the Pharmaceutical Sciences Executive Committee by the division faculty. He also serves the university through affiliations with the Center for Computational Sciences, Graduate Center for Nutritional Sciences, and Gill Heart Institute.

Expertise

Analytical Chemistry

Process Analytical Technologies

Chemometrics

Pharmaceutical Analysis

Near-IR Spectroscopy

Remote Sensing

Integrated Sensing and Processing

Credentials

Ph.D. Indiana University

B.S., M.S. Xavier University

Professor, University of Kentucky, Dept. of Pharmaceutical Sciences, Dept. of Chemistry, Dept. of Electrical and Computer Engineering