Richard A. Dluhy, Ph.D.

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Biographical Information

Ph.D., Rutgers University, 1982
Post-Doctoral Research Scientist, National Research Council of Canada, 1982-84
Senior Research Scientist, Battelle Memorial Institute, 1984-90
University of Georgia, 1990-present

Research Interests

Our research group works in the general areas of interfacial structure and biophysical spectroscopy using physically and chemically self-assembled nanomaterials. Self-assembled nanomaterials are a class of molecules relevant to such diverse applications as opto-electronics, sensors and biomaterials. Our research interests span a range of topics related to surface and interfacial analysis in these structures. Currently, we are using interfacial vibrational spectroscopy (infrared and Raman) for the study of membrane-related phenomena such as peptide recognition and lipid-protein interactions using both *in-situ* and supported planar bilayer membranes. We have developed novel nanofabrication methods of substrate preparation for use in the surface-enhanced Raman (SERS) characterization of interfacial systems, and are using these methods to study molecularly-engineered surfaces for potential applications such as sensors or biomaterial coatings. We are also further developing these new SERS methods as a powerful spectroscopic sensing tool for the identification of biomedically important pathogens, including viruses and bacteria. In addition, we are interested in the development of computational methods of two-dimensional infrared correlation analysis and have developed new model-dependent 2D IR correlation methods to analyze dynamic sets of spectra.

Publications

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S. Shanmukh, L. Jones, R. Alvarez, Y.-P. Zhao, R.A. Tripp and R.A. Dluhy, “Rapid and Sensitive Detection of Respiratory Virus Molecular Signatures Using Surface Enhanced Raman Spectroscopy”, *Nano Letters* **2006**, *6*, 2630.

R.E. Sallach, M. Wei, N. Biswas, V. Conticello, S. Lecommandoux, R.A. Dluhy and E.L. Chaikof, “Size Variable Micelles Regulated by a Reversible Switch of Protein Secondary Structure”, *Journal of the American Chemical Society* **2006**, *128*, 12014.

R.A. Dluhy, S. Shanmukh and S. Morita, “Application of 2D IR Correlation Spectroscopy to Interfacial Analysis”, *Surface and Interfacial Analysis* **2006**, *38*, 1481.

N. Biswas, A.J. Waring, F.J. Walther and R.A. Dluhy, “Structure and Properties of Dimeric SP-B_{1-25} and SP-B_{8-25}. IR and Raman Studies”, *Biochimica et Biophysica Acta* **2007**, *1768*, 1070