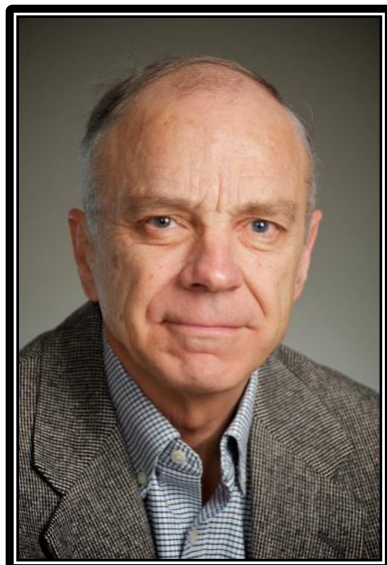


# Richard McCreery

## University of Alberta, Canada



Richard L. McCreery is Professor of Chemistry at the University of Alberta, following a Ph.D in Analytical Chemistry from the University of Kansas and academic appointments at the Ohio State University, including Dow Professor of Chemistry. In 2006, he joined the Chemistry faculty at the University of Alberta, with a joint appointment at the National Institute for Nanotechnology. His research involves spectroscopic probes of electrochemical processes, the electronic and electrochemical properties of carbon materials, and carbon-based molecular electronics. He served as an Associate Editor for the American Chemical Society journal *Analytical Chemistry* during 2005-2016. He has written over 260 refereed publications, including one book and twelve U.S. Patents, with three of those extended to Europe and Japan. He is a co-

founder of Nanolog Audio, Inc., which manufactures carbon-based molecular junctions for applications in audio processing for electronic music which became available commercially in 2016.

## Amazing what you can do with carbon electrodes (including music!)

Carbon electrode materials for electrochemistry underlie major benefits to society, notably in energy storage, manufacturing and biomedical analysis, in addition to widespread use in research for in-vivo monitoring and prosthetic medical devices. Many types of carbon are covalent electrical conductors with unusual stability and low cost, but difficulties in processing have constrained broad use in microelectronics beyond its classical application in resistors. Our research investigates carbon materials for electronics with two controlling questions: (1) How do combinations of carbon and organic molecules behave as elements in an electronic circuit? (2) What electronic functions can we do with carbon that can't be done with silicon? We devised a carbon based "molecular junction" which is sufficiently stable for consumer applications and is currently available commercially for electronic music accessories. Its properties and utility for several applications in music, photonics, and electronics will be described.

"All carbon"  
molecular junction:

