



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Department of Chemistry Kolthoff Lectureship in Chemistry

Professor Scott McLuckey Department of Chemistry Purdue University

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Faculty Host: Steven Kass



Scott McLuckey is the John A. Leighty Distinguished Professor at Purdue University. He earned his Bachelor of Science degree in chemistry from Westminster College in New Wilmington, PA, and his doctorate in chemistry from Purdue University. Professor McLuckey is an award-winning scientist whose honors include the American Chemical Society Field and Franklin Award in Mass Spectrometry, Fellow of the American Association for the Advancement of Science, ANACHEM Award from the National Federation of Analytical Chemistry and Spectroscopy, and American Chemical Society Division of Analytical Chemistry Award in Chemical Instrumentation. His service to the chemistry community includes serving as president of the American Society of Mass Spectrometry, and editor for the *International Journal of Mass Spectrometry*.

His research initiatives are heavily directed toward relatively large polymeric species including peptides, proteins, oligonucleotides, and synthetic polymers. Current projects include the application of electrospray and ion/ion chemistry to the rapid sequencing of DNA, the study of the dissociation chemistry of multiply-charged macro-ions, and the combination of ion/ion chemistry and unimolecular dissociation chemistry for the rapid identification of proteins in complex mixtures.

Lecture #1

Creativity with a Capital 'C': Laying the Framework for Making a Lasting Difference **4 p.m. Monday, April 4, 2016, 331 Smith Hall**

A reception for Professor McLuckey will be conducted at 5 p.m., Kate & Michael Bárány Conference Room (117/119 Smith Hall). All are welcome to attend.

Most scientists would like to see their ideas have a significant and lasting impact at some level, be it on society, on a scientific discipline or sub-discipline, on the direction of a company, etc. In the realm of scientific research, there are, by definition, many unknowns. As a result, the selection of research directions entails unavoidable risks. However, success and failure in research is hardly random. Some scientists are consistently more successful than others. While effort is certainly a necessary factor in a successful career in research, it is hardly sufficient. The tendency for generating novelty is usually what distinguishes the most successful scientists from the rest. This ability is often a combination of both creativity and discovery. Discovery is the observation and recognition of a novel phenomenon and this often leads to a creative new idea. There is no simple algorithm for the generation of an important new idea. However, there are practices and approaches that tend to favor or disfavor creativity. Being aware of how discoveries are often made and the characteristics of people that tend to make them can guide groups to instill an environment/culture that tends to maximize discovery. This presentation describes the overall process by which new ideas become part of the culture of a discipline that is passed from one generation to the next. These are the ideas that make a lasting difference. This is followed by a description of how creativity usually works and the characteristics of people capable of having good ideas and bringing them to fruition. The presentation is aimed at scientists in training and is therefore directed to graduate students. However, research advisors might also find the presentation to be useful as it can form a basis of discussion and reinforcement in establishing a productive and creative research program that relies on emerging scientists.

Izaak Maurits Kolthoff was born on February 11, 1894, in Almelo, Holland. He died on March 4, 1993, in St. Paul, Minnesota. In 1911, he entered the University of Utrecht, Holland. He published his first paper on acid titrations in 1915. On the basis of his world-renowned reputation, he was invited to join the faculty of the University of Minnesota's Department of Chemistry in 1927. By the time of his retirement from the University in 1962, he had published approximately 800 papers. He continued to publish approximately 150 more papers until his health failed. His research, covering approximately a dozen areas of chemistry, was recognized by many medals and memberships in learned societies throughout the world, including the National Academy of Sciences and the Nichols Medal of the American Chemical Society. Best known to the general public is his work on synthetic rubber. During World War II, the government established a comprehensive research program at major industrial companies and several universities, including Minnesota. Kolthoff quickly assembled a large research group and made major contributions to the program. Many of Kolthoff's graduate students went on to successful careers in industry and academic life and, in turn, trained many more. In 1982, it was estimated that approximately 1,100 doctorate holders could trace their scientific roots to Kolthoff. When the American Chemical Society inaugurated an award for excellence in 1983, he was the first recipient.

