



Society for Analytical Chemists OF PITTSBURGH



NOVEMBER MEETING

Monday, November 7, 2011
8:00 p.m.

Duquesne University
Mellon Hall of Sciences – Laura Falk Hall

Dinner: City View Café (6th Floor)



R. MARK WIGHTMAN, PH.D.

W. R. KENAN, JR., PROFESSOR OF CHEMISTRY
UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

"Iontophoresis Made Quantitative"



5:30 PM	Social Hour.....	Student Union – City View Café (6 th Floor)
6:30 PM	Dinner.....	Student Union – City View Café (6 th Floor)
7:30 PM	Student Affiliate Meeting.....	Student Union – Room 609
7:40 PM	Business Meeting.....	Mellon Hall of Science – Laura Falk Hall
8:00 PM	Technical Meeting.....	Mellon Hall of Science – Laura Falk Hall

ABSTRACT: R. Mark Wightman is the W. R. Kenan, Jr., Professor of Chemistry at the University of North Carolina at Chapel Hill, a position he has held since 1989. He is also a faculty member in the Neurobiology Curriculum and the Neuroscience Center. He was an undergraduate at Erskine College, graduating in 1968. In graduate school at the University of North Carolina at Chapel Hill he studied under Royce Murray, receiving a Ph.D. degree in 1974. From 1974 to 1976 he was a postdoctoral associate in the Department of Chemistry, University of Kansas with R. N. Adams. Prior to 1989, he was a Professor of Chemistry at Indiana University. He has made significant scientific contributions in analytical chemistry. He has used the analytical approach to make unique discoveries in electrochemistry and neurochemistry, research that is described in more than 360 publications.

In electrochemistry, Wightman and his research group demonstrated that electrodes of micrometer dimensions enable exploration of domains previously inaccessible to electrochemistry. His parallel research in neurochemistry, again using microelectrodes, provided the first real-time view of neurotransmitter dynamics in various preparations ranging from single cultured cells to the brains of animals during behavior. He has unraveled the complex electrochemical signals obtained from within the brain of awake, behaving rats to give an unprecedented view of dynamic chemical communication in the brain reward system. These studies have uncovered the previously unrecognized, subsecond signaling by dopamine that accompanies seeking of both natural- and drug-based rewards.

His accomplishments have been recognized with several awards including an Alfred P. Sloan Fellowship (1981), a Simon Guggenheim Research Fellowship (1997), the Herty Medal (2011) and the Analytical Chemistry Award of the ACS (2008). In recognition of his accomplishments in electrochemistry he has received the Chemical Instrumentation Award from the Analytical Chemistry Division of the ACS (1994), the David Graham Award from the Physical Electrochemistry Division of the Electrochemical Society (1995), the Charles N. Reilley Award from the Society for Electroanalytical Chemistry (1996), the Pittsburgh Analytical Chemistry Award (1997), the Electrochemistry Award from the Analytical Division of the ACS (2001), and the Faraday Medal from the Electrochemical Group of the Royal Society (2005). His research in neuroscience has been recognized by the Ralph N Adams Award from the Pittsburgh Conference (2006), and the Sir Bernard Katz Award for Excellence in Research on Exocytosis and Endocytosis from the Biophysical Society (2010).

BIOGRAPHY: By inducing the movement of ions and neutral species with the application of an electrical current, iontophoresis allows for drug ejections directly into localized regions of the rat brain to probe neuronal interactions. Recently, a method for the quantitative use of iontophoresis in vivo and the advantages of this particular methodology has been established using a carbon fiber microelectrode coupled to iontophoretic barrels filled with a solution of desired drug and a neutral marker molecule. This allows for the ejection variability introduced by electroosmotic flow to be monitored in real-time using fast scan cyclic voltammetry. With this technique the volume and reproducibility of ejections has been established in vivo in anesthetized rats and the ability of these ejections to modulate the electrically evoked release of dopamine in the caudate of anesthetized rats quickly and reversibly has been established. This allows for better understanding of how much of the brain is affected by an ejection in a localized region and this unique methodology gives unique insight into the neurochemical response to localized drug administration.

DINNER RESERVATIONS: Please complete the [Monthly Dinner Reservation Form](#) under Meeting Notices on our website www.sacp.org by Wednesday, November 2, 2011. Should you not be able to access the form, please contact Valarie Daugherty, SACP Administrative Assistant at 412-825-3220 ext 204 to make your dinner reservation. If you have any dietary restriction, please make a note when you make your reservation. The entrée for November is Crab Cakes. Dinner will cost \$8 (\$4 for students) and checks can be made out to the SACP.

PARKING: Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage, you will need to get a parking ticket and drive to upper floors. Bring your parking ticket to the dinner or meeting for a validation sticker. Should any difficulties arise, please contact Duquesne University.