



Spectroscopy Society of Pittsburgh September Meeting

Duquesne University – Bayer Learning Center (Pappert Hall)

Wednesday – September 21, 2011

Technology Forum Speaker's Presentation **5:30PM**

Social Hour **6:00PM**

Dinner in the City View Café (6th Floor) **6:30PM**

Business Meeting **8:00PM**

Technical Program Speaker's Presentation **8:15PM**

Deadline for Dinner Reservations **9/16/11**

[On-line Reservations](#)

TECHNOLOGY FORUM - 5:30 PM

Brian Beebe, Director Core Engineering, Westinghouse Electric Company

“An Assessment of the Fukushima Nuclear Incident”

Brian will talk about the Fukushima Japan Nuclear site's incident due to the March 11, 2011 Japan earthquake and tsunami. The discussion will start with a sequence of events at the Fukushima site during and shortly after the earthquake and tsunami and move through specific site actions up to the current date. Next the discussion will focus Westinghouse's actions since the accident.

Bio

Brian Beebe is Director of Core Engineering in Westinghouse Electric Company's Nuclear Fuel Division. Westinghouse is the recognized world leader in the building of Nuclear Power Electric Generating Plants, Operational Support for Nuclear Power Plants, Nuclear Fuel Development and Supply and overall nuclear power generation research and development. Core Engineering is responsible for PWR and BWR methods, modeling, licensing, and operational support of more than 100 nuclear reactors around the world. Brian is a three time recipient of the George Westinghouse Engineering Signature Award of Excellence, a five time recipient of the Performance Excellence Award, and a graduate of the Westinghouse Customer First leadership Program. During his tenure at Westinghouse Brian has worked at many of Westinghouse's facilities worldwide including living for 2 years in Västerås, Sweden. Prior to joining Westinghouse Brian received his MS and BS with High Honors in Nuclear Engineering from the University of Florida.



TECHNICAL PROGRAM - 8:15PM

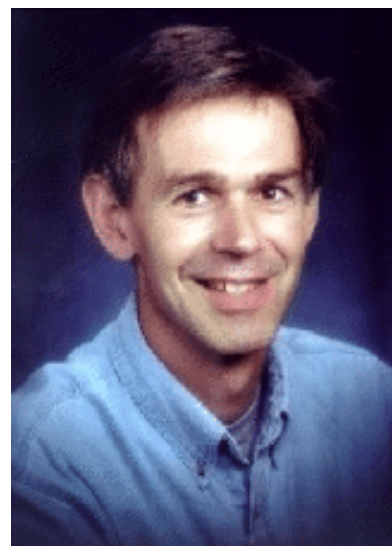
Dr. Adriaan Bax, Laboratory of Chemical Physics, NIDDK, NIH, Bethesda, MD

“Chemical shifts and dipolar couplings: how can they help?”

NMR chemical shifts provide important local structural information for proteins. Consistent structure generation from NMR chemical shift data has recently become feasible for proteins with sizes of up to 130 residues, and such structures are of a quality comparable to those obtained with the standard NMR protocol. Further enhancements in empirically derived relations between chemical shift and protein structure, together with small angle X-ray scattering data, hold promise to extend protein structure determination to systems much larger than can be studied using conventional approaches. Study of membrane protein structure by solution NMR frequently poses particular challenges, as the rotational correlation time for such systems in the presence of the requisite detergents often is much longer than for water soluble proteins of comparable size. The protein and detergent choice are usually optimized for generating conditions that yield the optimal NMR spectral properties, preferably allowing complete spectral assignments and permitting the measurement of numerous RDCs. With the above mentioned novel computational approaches, the chemical shifts are yielding increasing structural restraints, while use of DNA-based liquid crystals in addition to stretched acrylamide gels permit the measurement of accurate RDCs. Application is demonstrated for the fusion domains of hemagglutinin. RDCs and relaxation measurements in micelles and bicelles provide important information on the dependence of structure and dynamics on the lipophilic environment.

Bio

Adriaan (Ad) Bax was born in 1956, in The Netherlands and became a US citizen in 1999. He received his Ph.D. in 1981 from the Delft University of Technology, The Netherlands, for work related to the development of two-dimensional nuclear magnetic resonance (NMR) techniques, which he carried out at Delft and Oxford Universities. His Ph.D. thesis was reprinted in book format and for many years served as a popular text, introducing students to the application of two-dimensional NMR in chemistry. After post-doctoral work in solid-state NMR, Bax joined NIH where he currently holds the title NIH Distinguished Investigator. His work focuses on the development and application of a wide variety of advanced multi-dimensional NMR techniques to problems of biochemical and biomedical interest. Advances in the studies of proteins, pioneered by him and his group include the development of high-sensitivity indirect detection methods for ^{13}C and ^{15}N ; the development of an approach to characterize the ^{15}N amide motions in proteins at high sensitivity; the development of $^{13}\text{C}/^{15}\text{N}/^1\text{H}$ -based triple resonance multi-dimensional NMR to assign resonances in proteins; the introduction of heteronuclear three- and four-dimensional spectroscopy for the study of protein structure; the introduction of uniform perdeuteration of proteins for the purpose of improving resolution and sensitivity of triple resonance NMR spectra; the introduction of technology that imposes a weak degree protein alignment permitting the measurement of residual dipolar couplings; and the introduction of advanced procedures that make it possible to model protein structures on the basis of chemical shifts. He and his group have applied their novel technology to a range of biomedically important systems, including the regulation of kinases by calmodulin, the structures of HIV proteins such as Nef and the catalytic core domain of integrase, the Parkinson's disease related protein alpha-synuclein, and the fusion domain of influenza virus protein hemagglutinin.



Bax's work has been recognized by numerous awards, including the Maryland Outstanding Young Scientist Award from the Maryland Academy of Sciences, the Gold Medal from the Dutch Chemical Society, the Bijvoet Medal from Utrecht University, the Protein Society Young Investigator Award, the E. Bright Wilson, Hillebrand, and Remsen Awards from the American Chemical Society, the Kirkwood Medal from Yale University, the Gunther Laukien Award from the Experimental NMR Conference, the John Scott Award from the City of Philadelphia, the Jeanette Piperno Award from Temple University, the Hans Neurath Award from the Protein Society, and the Glenn Seaborg Medal from UCLA, and the City of Florence Award for the Molecular Sciences. He holds an honorary doctorate from the Free University of Brussels, is a corresponding member of the Dutch Royal Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, a competing member of DC Velo, and a Member of the National Academy of Sciences.

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Dinner Reservations:

Please register on-line at <http://www.pittcon.org/misc/societies/ssprsvp.php> to make dinner reservations NO LATER THAN FRIDAY, September 16, 2011. This month's entrée is Trout Almondine (alternative dinner options are a chicken or vegetarian dish). Dinner will cost \$8 and checks can be made out to the SSP. If you have any dietary restrictions, please indicate them when you RSVP.

Parking Instructions:

The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting.