



March Meeting of the Delaware Section ACS Delaware Section Award

Professor Andrew V. Teplyakov

Department of Chemistry and Biochemistry, University of Delaware

Chemistry of Semiconductor Surfaces in Vacuum and in Ambient

Presentation of Undergraduate Student Award

Date: March 14, 2012
Time: 6:00 pm Social (cash bar)
6:30 pm Dinner
7:30 pm Presentation
Place: Deerfield Country Club
Location: 507 Thompson Station Road, Newark, DE
Cost: \$30 ACS members
\$35 Guests
\$15 Students
Dinner: Citrus Greens
Choice of Chicken Grand Marnier or Salmon
Filet with Lobster Dill Sauce
Raspberry Marble Cheesecake
Reservation deadline: Friday, March 9, at 5 pm.
Reservations not cancelled by that date will be billed.
For information contact Andrea Martin at 610-499-4515 or
visit our web site, <http://delacs.sites.acs.org/>



Abstract:

Since the 80's, the reactions of organic and organometallic compounds with group IV semiconductor substrates have been of great interest both from fundamental and from practical applications points of view. These reactions are relevant in thin film growth, design of microelectronic, molecular electronic, bioelectronic components, biosensing, energy conversion, and catalysis. Two basic approaches focused on either UHV surface functionalization of clean single crystals or on the reactions of H-terminated substrates. Most recently, the focus of our research has been in preparing the surface functionalities normally achievable in UHV but using wet chemistry approaches. The discussion will bring up the use of multiple spectroscopic and microscopic techniques and DFT calculations to investigate the functionalization of semiconductors.

Speaker:

Andrew V. Teplyakov is a Professor of Chemistry and Biochemistry at the University of Delaware. He has completed his undergraduate degree at Moscow State University, Moscow, Russia, in 1992. He received his PhD from Columbia University, New York, NY, in 1997 under the guidance of the late Professor Brian Bent, where he also worked with Professor George Flynn. After receiving his PhD, Andrew held a postdoctoral position in the group of Professor Stacey Bent (currently at Stanford University, Department of Chemical Engineering). Andrew joined the faculty at the Department of Chemistry and Biochemistry at the University of Delaware in 1998. His research is focused on an interdisciplinary area of surface and thin film science. His group has developed several novel approaches to understanding chemical binding on surfaces of amorphous diffusion barrier films, surface chemistry of multifunctional molecules, surface modification of semiconductor materials in ambient, electron transfer and molecular junctions, specifically electronic properties controlled by surface preparation and modification, and more recently, covalent binding of biomolecules to semiconductors. This research uses a wide array of surface analytical techniques, microscopic characterization, and computational investigations. It has resulted in over 75 publications and over 60 invited presentations. Andrew has actively participated in ACS activities, organizing multiple symposia. He is a member of the Eastern Analytical Symposium Governing Board. He is also an active member of the Center for Catalytic Science and Technology at the University of Delaware.