

MARM 2008 Awards

The Stanley C. Israel Regional Award for Advancing Diversity in the Chemical Sciences

Sponsored by the Committee on Minority Affairs of the American Chemical Society

Winner for MARM 2008

Chemistry Department Queensborough Community College of CUNY



Queensborough Community College (QCC) is one of the six community colleges in the City University of New York (CUNY). Half of its students are foreign born and the ethnic composition consists of 26% African-American, 25% Hispanic, 21% Asian and 27% Caucasian. 57% of its faculty hold doctorates, almost three times the national average for community colleges.

The Chemistry Department at QCC is composed of nine full time Ph.D. faculty, two college laboratory technicians and two dozen adjuncts. Since 2001, it has seen a doubling in the number of registered students, and also full time faculty. Led by the chair Paris Svoronos (Ph.D., Georgetown University, 2003 CASE/Carnegie Foundation Outstanding Professor of the Year), the department has worked as a team to develop into a prime time undergraduate institution. This group of faculty include Irina Rutenburg (Ph.D., CUNY Graduate Center), Sasan Karimi (Ph.D., CUNY Graduate Center), Moni Chauhan (Ph.D., Universite de Montpellier), Daqing Gao (Ph.D., Boston College), Sharon Lall-Ramnarine (Ph.D., CUNY Graduate Center), David Sarno (Ph.D., SUNY Binghamton, Post-doctoral University of Pennsylvania under 2000 Nobel laureate Alan MacDiarmid), Jun Shin (Ph.D., Columbia University) and Mihaela Bojin (Ph.D., Cornell University under 1981 Nobel laureate Roald Hoffmann), as well as college lab technicians Pedro Irigoyen and Bruce Montalbano and adjunct faculty Luis Vargas (Ph.D., University of Madrid), Syamala Ranganathan (M.S., Madras University) and Gopal Subramaniam (Ph.D., Vanderbilt University).

Undergraduate research has expanded from one student in 2000 to thirty in 2008. This gradual progress was also coupled with grants totaling close to \$3 million dollars in the last five years that enabled the acquisition of instruments such as a 60-MHz NMR, FT-IR, GC-MS, UV-Vis, C,H,N Analyzer, HPLC, and a tabletop scanning electron microscope, as well as a new laboratory dedicated to student-faculty research. QCC students have made more than 300 presentations in local, regional and national ACS meetings in the last five years.

The E. Emmet Reid Award in Chemistry Teaching at Small Colleges in the ACS Mid-Atlantic Region

Winner for MARM 2008

Dr. Claude Yoder
Franklin & Marshall College



Dr. Claude H. Yoder obtained his BA from Franklin and Marshall College in 1962 and his PhD from Cornell University in 1966. He returned to F&M to teach in 1966, was Chairman of the department from 1974-1982, and was designated Charles A. Dana Professor of Chemistry in 1986. He has written over 120 papers on the organometallic chemistry of the Group IV elements and has recently turned his attention to the characterization of inorganic systems of mineralogical interest. He is the coauthor of several General Chemistry texts, including the first electronic General Chemistry text, and a text on *Multinuclear NMR Spectroscopy*. His most recent book is *Ionic Compounds, Applications of Chemistry to Mineralogy*, published by Wiley. He is the recipient of a Dreyfus Teacher-Scholar grant, the CMA Catalyst Award, the ACS Undergraduate Research Award, and was a founding member of the Council on Undergraduate Research. In addition to General and Inorganic Chemistry, he has taught advanced courses on Organometallics, Analytical Chemistry, and Synthesis and Structure Determination.

His favorite part of teaching is working side-by-side with more than 100 undergraduate researchers he has mentored over the last 41 years.

**The ACS Division of Chemical Education
Middle Atlantic Region Award for
Excellence in High School Teaching**

Winner for MARM 2008

**Ms. Claire Miller
Madison High School**

170 Ridgedale Ave
Madison, NJ 07940

Ms. Miller received a BS degree from Georgian Court College and an MA from Rutgers University and has been teaching chemistry at Madison High School in New Jersey for 35 years. She has been an inspiration to her students and a role model for other educators.

When students enter Claire Miller's chemistry class, they feel excitement, interest and enthusiasm. Her students are highly motivated because they know that something interesting and exciting will happen. It may be that they will be constructing huge balloons to study gas laws or that they will be using the latest technology to gauge the rate of chemical reactions. Her teaching ability is top notch. Her students sense her caring attitude and thoughtfulness and they rise to her standards. A former student describes her as "The Teacher Who Made a Difference. She challenged our formative minds and in turn enabled us to challenge ourselves."

Claire is equally respected by her colleagues and she shares her expertise with other members of her department. She has developed professional development activities that use technology and probeware to enhance laboratory investigations in chemistry, biology, physics and earth science. She has created a laboratory safety program that demonstrates safety techniques to the students. She is a regular presenter at the New Jersey Science Teachers Convention and at monthly ChemTAG meetings. Claire stays current with the latest educational trends and scientific information by regularly attending seminars and workshops and she typically earns 60 professional development hours per year.

Regional Industrial Innovation Award

Sponsored by ACS Corporation Associates

Winner for MARM 2008

Dr. Thomas P. Selby
Ms. Charlene G. Sternberg
Dr. James F. Bereznek
Mr. Reed A. Coats
Mr. Eric A. Marshall

Proquinazid Team
DuPont Crop Protection

Among the threats to the human food supply, the devastation of crops by fungal epidemics is one of the worst. Throughout human history, many instances of plant disease causing food shortages and famines have been reported. Perhaps the most devastating of these was the Irish potato famine of the 1840's. Today, many commercial fungicides are known that help keep fungal diseases in check. However, certain plant pathogens are able to develop immunity to the fungicides which once controlled them. Resistance of the fungus *Blumeria Graminis*, the cause of the plant disease powdery mildew, to many commercial fungicides has made it and related powdery mildews a persistent problem for farmers of wheat, barley, grapes and other crops. In order to protect the food supply from the deleterious effects of the various powdery mildews, chemists at crop protection companies have to continuously come up with new agents to control the fungus and its close relatives.

Chemists at *DuPont's Stine-Haskell Research Center in Newark, Delaware* have been able to discover and optimize a selective new class of powdery mildew agents that ranks as the most active ever discovered. The result of their labors has been the development and commercialization of the fungicide **Proquinazid**. Proquinazid is currently sold in Europe under the brand names of **Talius and Talendo**.

The story of Proquinazid began in the laboratories of **DuPont Research Fellow Thomas P. Selby**. Selby and **Staff Scientist Reed A. Coats** were working on the synthesis of a novel class of new herbicides when a hint of fungicide activity appeared after several of the analogs were tested against wheat powdery mildew. Selby and his team began an optimization program to increase the fungicidal activity of the class. Over the course of several months the team was able to achieve a several fold jump in activity, eventually far exceeding the activity of commercial standards.

In order to optimize the physical properties of the area, Selby suggested to another **DuPont Chemist Charlene G. Sternberg** that changing the ring system from the pyridopyrimidine system to the quinazoline system might help improve the physical properties of the molecule. Sternberg began a synthesis and optimization program that quickly produced compounds with increased activity and stability. Among these compounds was the compound coded KQ926 which would eventually be chosen for development by DuPont Crop Protection under the common name of Proquinazid.

When Selby later went on to accept new responsibilities at DuPont, the chemical research leadership was carried on by **DuPont Group Leader James F. Berezna**k. The chemical optimization was continued and eventually over 600 compounds were synthesized by the chemistry team. Berezna and **Staff Scientist Eric A. Marshall** discovered and patented alternate ring systems which were just as active as that found in Proquinazid. The exemplary team effort took place over the course of 4 years and produced the most active powdery mildewicide ever discovered.

In addition to tremendous intrinsic activity, there are many other important aspects to the exquisite field activity of Proquinazid. It is unique in crop protection in that it contains an iodine atom which contributes to its excellent field performance. Proquinazid is able to efficiently redistribute under field conditions due to vapor action. By carefully optimizing overall vapor pressure, the chemistry team was able to synthesize a highly active compound which was able to protect new growth. This important characteristic allows Proquinazid to protect the farmer's plants for an extended period at very low rates without the need for additional spray applications. Another important characteristic of Proquinazid is that the iodine atom also contributes to an increased stability to sunlight allowing field application at even lower rates.

Additionally, the mode of action of Proquinazid is novel and it retains activity against all of the resistant powdery mildew isolates encountered by farmers. Proquinazid inhibits the fungi from establishing an infection by disrupting the formation of appresoria. Fungal appresoria burrow into the plant cells to obtain nutrients to continue the fungal growth cycle. Deprived of nutrients, the fungus never establishes itself on the plant. Because of this Proquinazid acts as a protectant to the plant and is applied by the farmer before the appearance of the disease.

Proquinazid has proved to be an excellent addition to the modern farmer's arsenal of weapons against the onslaught of fungal borne plant diseases. The low use rates are also a boon to the environment. Proquinazid is able to replace older chemicals which are currently applied at up to 20 times its labeled use rate. The long residual activity also allows farmers to use fewer spray applications in a season further lowering environmental impact.

The first Proquinazid based products reached the European marketplace in 2004 and were an immediate success. The entire production run was sold out during the first years of commercialization. Additionally, each year Talus and Talendo are registered and launched in several new countries. In 2007 sales began in the United Kingdom. Since the 2004 launch, tens of millions of dollars of sales have already been achieved and growth is expected to increase each year as new markets are entered. Worldwide commercialization and registration are continuing.

The Chromatography Forum of Delaware Valley Student Award Symposium

Winners for MARM 2008

Michael J. Bozym
Casey M. Mulcahy
James D. Vasta
Christopher J. Morrison
Alyson M. Cobb
Sarah A. Schubert
Ranasinghe K. Sampath

The winners will present their work at the DVCF student award symposium on Monday, May 19, from 1:30 pm to 5 pm. The scheduled presentations are:

- **Michael J. Bozym**, Michelle L Owens, Anna Glinko, Karyn M. Usher, West Chester University "Separation of Water Soluble Vitamins by UHPLC"
- **Casey M. Mulcahy**, Scott H. Snyder, Karyn M. Usher, West Chester University "Extra Column Effects as a Function of Flow Rate"
- **James D. Vasta**, Joseph Sherma, Lafayette College "Optimization of the Application Method for Postchromatographic Derivatization Reagents in TLC-Densitometry Illustrated by the Detection of Neutral Lipids Using Phosphomolybdic Acid Applied with Spraying, Dipping, and the Derivapress"
- **Christopher J. Morrison**, Gennaro J. Maffia, Widener University "Lost Protein Technology for Proppant and Catalyst Manufacture"
- **Alyson M. Cobb**, Kyle W. Eckenroad, Gregory A. Manley, David Rovnyak, Timothy G. Strein, Bucknell University "Examining Chiral Separations with Bile Salt Micelles Using MEKC and NMR"
- **Sarah A. Schubert**, John W. Stahl, Timothy G. Strein, Bucknell University, Geneva College "Investigation of Buffering and Mixing Conditions for the Jaffe Reaction with Capillary Electrophoresis"
- **Ranasinghe K. Sampath**, John W. Stahl, Timothy G. Strein, Bucknell University, Geneva College "Improving the Sensitivity of Electrophoretically Mediated Micro Analysis (EMMA) for the Determination of Creatinine"

The E. Ann Nalley Regional Award for Volunteer Service to the American Chemical Society

Winner for MARM 2008

**Dr. N. Bhushan Mandava
Mandava Associates, LLC**



N. Bhushan Mandava holds B.S., M.S. and Ph.D. degrees in Chemistry and has published over 160 papers, including two patents, several monographs, reviews, and books. He is the Editor-in-Chief of the Ten-Volume CRC Handbook Series on Naturally Occurring Pesticides. Dr. Mandava has been serving in senior management positions for American and foreign companies which are involved in marketing of commercial and agricultural chemicals and health care and consumer products. He consults in health, safety and environmental issues related to agricultural and commercial chemicals, foods, drugs, and biotechnology products. Formerly, he was associated with the U.S. Department of Agriculture and the Environmental Protection Agency as Research Chemist and Senior Science advisor, respectively. He has held several visiting and adjuncts Professorships, and acted as a consultant on pesticides and drugs to various foreign governments. He frequently serves as an expert advisor on pesticides and pharmaceuticals to the Agencies of the United Nations Development Program.

Dr. Mandava has been active in many professional organizations. He has served as President of the Chemical Society of Washington, Councilor of the American Chemical Society, on the Editorial Boards of the Journal of Liquid Chromatography and Regulatory Affairs, on the Board of Advisors to the American Biographical Institute. He was appointed by the Secretary of the United States Department of Transportation to the Chemical Transportation Advisory Committee (CTAC) which advises the U.S. Coast Guard on marine transportation of chemicals.

Dr. Mandava was the 1983 recipient of the USDA Superior Service Award. He received a best publication award from the U.S. Naval Research Laboratory for his research contribution. He has also received the Chemical Society of Washington's prestigious Hillebrand Prize, Charles Gordon Award and Community Service Award. He is listed, among other citations, in American Man and Women of Science, International Scholars Directory, Who's Who in North America, Who's Who in Technology today, Who's Who in Frontiers of Sciences and Technology, International Leaders in Achievement, and Personalities of America. He is a Certified Chemist (CPC) and a Regulatory Affairs Certified (RAC).

Dr. Mandava's areas of special expertise include; drugs and pesticides regulation; food, agricultural and pharmaceutical chemistry; plan biotechnology; new product

development and market analysis; good manufacturing practice (GMP) and good laboratory practice (GLP) regulations; biochemistry; environmental chemistry; plant and animal physiology and metabolism; hazard, exposure and, risk assessment; hazardous wastes; and right-to-knows laws.

Dr. Mandava has also been involved in Public Outreach, an American Chemical Society program dedicated to improving the public appreciation of chemistry and chemistry's central role in our lives. He has been a Career Consultant for more than 15 years, assisting the ACS members in issues related to career management.