USF UNIVERSITY OF SOUTH FLORIDA

USF Chemistry NEWS

News of Interest to
Friends of the Department of Chemistry
University of South Florida

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USF Receives $8 Million Center of Excellence Grant in Biotechnology…

USF will be the site of a new Florida Center of Excellence in Biomedical Identification and Targeted Therapeutics (BITT), thanks to a $8 million grant from Florida's Technology, Research, and Scholarship Board (FTRSB).

Dr. Robert Chang, (VP-Research) the Principal Investigator on the grant, and **Dr.Carl Carlucci,** USF's Chief Financial Officer, worked closely with a team of investigators from a variety of different research fields at USF and collaborators around the region to put this center proposal together.

A major component of the grant was the drug discovery group of the Chemistry department, the Center for Molecular Diversity in Drug Design, Discovery, and Delivery (CMD^5). CMD^5 is the culmination of three years of planning and strategic growth by the Chemistry department under the direction of department chair, **Mike Zaworotko.**

Dr. Edward Turos, Professor of Chemistry and director of CMD^5, indicated that "BITT is the first comprehensive center of its kind at USF, joining together signature research programs from the colleges of Arts and Sciences, Medicine, Engineering, and Public Health. This is truly a team effort that will have a major impact on the growth of biotechnology in the region, by providing state-of-the-art instrumentation and expertise in a wide breadth of research disciplines to the biomedical and biotechnology sectors." The center is expected to attract to the Tampa campus BioVest International, Inc, a Massachusetts-based cancer vaccine development company.

A total of thirty two Center of Excellence applications were initially submitted to the state for consideration, and after an initial review by the FTRSB, BITT was selected as the best proposal. Teams representing the top 19 applications gave oral presentations on the proposed centers to the FTRSB in Orlando this past Sunday and Monday (November 12/13).

The USF presentation team included **President Judy Genshaft**, **Dr. Daniel Lim,** and **Dr. Bob Weiss,** Vice Chairman of the Board of BioVest, who unveiled the details of the plans for the comprehensive center, including the $39 million of investment from other sources (USF, City of Tampa, Hillsborough County and the Florida High Tech Corridor Council), an economic impact of $188 million, and the creation of approximately 400 new scientific and technical jobs in the Tampa Bay region.

On Monday evening (11/12), the final rankings of the applications were announced, with BITT earning the top rank, leading to the $8 million Award that was

approved at the subsequent Board of Governor's meeting

Our congratulations to all involved in this impressive team effort.

[Tribune source: http://www.tbo.com/news/scitech/MGB5PTAQHUE.html]

Ashford honored…

In a ceremony held 4 pm Thursday November 2, the late **Dr. Theodore Askounes Ashford** was honored in Chemistry Lecture Hall 100. Dr. John Skvoretz, Dean of the College of Arts and Sciences presided at the ceremony at which the room where Dr. Ashford had lectured was formally dedicated to his memory. A plaque will be affixed at a later time. Friends of Dr. Ashford and his son **Dr. Robert Ashford,** Professor of Law, Syracuse University were present at the ceremony and at a reception hosted by Dean Skvoretz.

Dr. Ashford was the first Full Professor of Chemistry, (1960- 1981) and was a Division Director (1960-1971) and Dean of the College of Natural Sciences and Mathematics (1971-1981?).

Additional information about Dr. Ashford's contributions may be found in the Department history on our Web page.

Nobel Laureate lecture

The 2006 Nobel Laureate in Science Lecture Series, sponsored by TIAA-CREF, was given Thursday, November 2.

Sir Harold Kroto, Francis Eppes Professor of Chemistry at Florida State presented two lectures.

Professor Kroto is well-known due to his role in the discovery and identification of C60 - the remarkable soccer ball-like carbon molecule otherwise known as buckminsterfullerene or "buckyball". It was this particular discovery that also resulted in **Dr. Kroto** being a co-recipient of the Nobel Prize for Chemistry in 1996.

Prior to this, he had made significant contributions in the spectroscopy and synthesis of other previously assumed impossible molecular species, in particular molecules with multiple carbon-phosphorus bonds. Using radio astronomy and laboratory experiments, **Dr. Kroto** went on to make the surprising discovery that long linear carbon chain molecules existed in interstellar space and also in stars. It was during laboratory attempts to understand how these species came to be so abundant that the fullerene molecules were discovered.

Following a reception, the evening lecture was "Science, Society, and Sustainability," at which **Dr. Kroto** discussed numerous aspects of science. What Science is, how others - the Media, politicians and others - perceive science and scientists and some of the problems that non-scientists have in understanding the Science, Engineering and Technology (SET) upon which our modern *w*orld is so completely and precariously balanced. SET has truly revolutionized our lives; however, our technologies have also catalyzed a mindless mass production-driven plundering of the Planet's resources, which may be hurtling us towards disaster.

Dr. Roman Manetsch, Assistant professor of Chemistry coordinated the event, and **Dr. Zaworotko** introduced Sir Harold at the presentations. Members of the College of Arts and Sciences Development office assisted.

Recognition…

Last summer, **Dr. Abdul Malik** was invited to serve as the "Official Opponent" at a Ph.D. dissertation defense meeting scheduled for October 6, 2006 at the Department of Physical and Analytical Chemistry at the Biomedical Center of Uppsala University, Sweden. It was the dissertation of Nina Johannesson (the **defendant**) titled "*Column Development in Capillary Electrophoresis and Electrochromatography for Bioanalytical Applications*". This research work was carried out under joint supervision of Professor Jonas Bergquist and Professor Karin Markides. According to Swedish tradition, a Ph.D. dissertation defense is a public event where the merit of the research work presented in the dissertation is publicly evaluated for a doctoral degree. For this, an outside expert (the **official opponent**) in the area of the dissertation is invited to attend the defense meeting and help with this evaluation job.

Dr. Malik noted, "It was a great honor for me to be able to serve in this capacity in the department where Nobel Laureates Svedberg (1926) and Tiselius (1948) once worked."

Doctoral defenses elsewhere…

Many are familiar with the fact that a doctoral defense at USF involves a presentation before a committee consisting of the candidate's advisory committee, but not headed by a chairperson external to the department, who runs the defense. Members of the committee ask questions after a formal presentation, and members of the audience are also allowed to ask questions. The committee then excuses the candidate and deliberates. The process lasts between two and three hours.

Thanks to **Dr. Abdul Malik,** we have an insight into how the process is handled at the University of Uppsala.

"The order of the events in the defense meeting was as follows:

(1) The chair of the defense committee (Professor Bergquist) gave a brief welcome address where he introduced the defendant, the official opponent, and the members of the defense committee (~ 5 min);

(2) Then the official opponent (i.e., myself) gave a brief introduction to the research work in the dissertation (~ 20 min) in layman's terms so that the audience could understand the scientific contribution made in the dissertation;

(3) Following this, the defendant (Nina Johannesson) made a presentation on the dissertation: its content, novelty, scientific merit, and broader impacts (~ 30 min);

(4) After a 10-min break, began the most important part of the defense meeting. It was a one-on-one public session between the official opponent and the defendant. In this session, I had to do my major duty as the official opponent and ask the defendant questions on various aspects of the dissertation gradually raising the difficulty level of the questions being asked. This session lasted one hour and ten minutes.

(5) After this, the defense committee members (5) took the turns to ask questions on the dissertation. This was also a public event and lasted for about 20 min.

(6) In the final part of the public event, questions were invited from the audience. It lasted about 5 min.
(7) After this, the defense committee members met in a closed door session, and in consultation with the official opponent, made their decision whether the defendant successfully defended the dissertation."

Have student, will travel

As noted in a previous issue, doctoral candidate **Ms. Tanise Shattock**, is the recipient of the 2006-2007 Merck Research Laboratories Graduate Fellowship and is spending the fall 2006 semester doing research at Merck Research Laboratories in Rahway, NJ.

Her advisor, **Dr. Mike Zaworotko**, conferred with her in person in Philadelphia where they presented a workshop on Pharmaceutical Co-Crystals September 18th, and he presented a conference lecture on September 19th.

Introducing a new faculty members…

Two new colleagues have been named **External Graduate Affiliate faculty members** in the Department of Chemistry

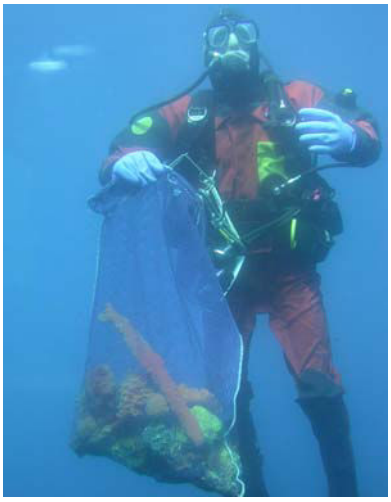
Nicholas J. Lawrence, Ph.D. Drug Discovery Program, H. Lee Moffitt Cancer Center & Research Institute.

John Koomen, Ph.D. Assistant Professor, Department of Interdisciplinary Oncology; Scientific Director, Proteomics Core Facility; Member-in-Residence of the Moffitt Cancer Center.

Out and about…

Dr. Bill Baker, Associate Professor, was featured in the business section of the Tampa tribune recently. It was concerned with "USF Turning Brainpower into Business."

In this example, a key compound, Palmerolide A, an anticancer agent was isolated from Antarctic tunicates (or sea squirts), sponge like creatures. This was isolated by Dr. Baker and his research team.



How Dr. Baker and colleagues collected their samples in Antarctic waters.

Palmerolide A seems to single out and attack melonoma cells in laboratory tests as well as mouse tumors.

Past support ($500,000) from NSF got Dr. Baker and his collaborators to this stage.

The next stage is commercial development for testing. And Dr. Baker would like to find significant funds to develop the compound here at USF.

See www.research.usf for a list of 180 discoveries that are ready for licensing including Palmeroide A.

SERMACS-2006 Meeting (Augusta, GA November 1-4).

Dr. Randy Larsen not only presented a paper and contributed others, but hauled Chemistry Department students the 450 miles to Augusta (and back) in his Suzuki SUV. Student presenters were **Dijana Likic, Audrey Mokdad, William Maza,** along with **Carissa Reimink.** Presenters **Miranda L. Chaney**, **John J. Perry IV,** and **David Weyna** accompanied by **Jason Perman** represented **Dr. Mike Zaworotko's** research group. **Dean** and **Barbara Martin** contributed two papers**.**

REU News

REU is a research experience for undergraduates and was initiated as an NSF-supported summer program with a three-year grant, as noted in previous issues of *News*. The program was adapted to the fall and spring semesters starting with the fall of 2005 and some 70 students.

Campus changes --- past and future…

Marshall Center (Student Union): This is also scheduled for some remarkable changes. A $64 million facility is expected to open in May 2008. See drawings and a "flyby" at www.ctr.usf.edu

Faculty you should know

Spotlight on…

Dr. Mark L. McLaughlin is Professor of Chemistry and Interdisciplinary Oncology. He started out as a Chemical Engineering major but switched to Chemistry because he loved Organic Chemistry and received a B.S. in Chemistry from Christian Brothers University (Memphis, TN) in 1979. He received his Ph.D. in Organic Chemistry from the Georgia Institute of Technology (Atlanta, GA) in 1983. Following postdoctoral fellowships at Rice University and the Ohio State University from 1983-1986, he started his academic career in the Department of Chemistry, Louisiana State University (Baton Rouge, LA) and was promoted through the ranks to professor in 2000.

Dr. Mark McLaughlin

He was recruited to become the first chemist hired at the Moffitt Cancer Center with a joint and primary appointment in the

Department of Chemistry and a secondary appointment in the Department of Interdisciplinary Oncology at USF in 2002. His research interests include the synthesis of constrained amino acids as the building blocks of peptide or protein mimics and cell permeable peptide nucleic acids.

He and his research group are involved with three different projects to design and synthesize scaffolds that they are testing as drug candidates or as diagnostic aids. The two most common protein secondary structures are the alpha-helix and the beta-sheet. "We are mimicking these two secondary structures as a way to block protein-protein interactions involving those secondary structures," McLaughlin said.. The specific protein-protein interactions that they are attempting to block are those critical to aberrant cell growth or cell survival seen in cancer.

In a third project, they are synthesizing a new cell permeable peptide nucleic acid scaffold that can be used to block the translation or transcription of specific proteins. This technology has numerous possible therapeutic uses and a few will be discussed. These peptide nucleic acids (PNAs) can also be used as diagnostic aids. PNAs have a higher affinity and higher specificity for complementary DNA or RNA strands than DNA and RNA have for each other. This makes cell permeable PNAs potentially valuable probes inside living cells.

Owen cited…

U.S. Patent 5,185,450 (1993) describes novel tetrazolium compounds for cell viability assays; the inventor was **Dr. Terence Owen**, now Emeritus Professor of Chemistry.

A recent check of "Google" indicated the major impact this invention has had. Search for MTS Tetrazolium and you should obtain about 60,700 "hits". Some articles refer to "Owen's Reagent".

Staff members you should know….

Mr. John Connaughton recently re-joined our Department as our Accountant. We are delighted he is back.

We hear about……

George P. Cobb (Ph.D.'87) and his group at Texas Tech Institute of Environmental & Human Health were mentioned in the October 2 issue of C*hemical & Engineering News (p.47). T*he news article was concerned with hazardous levels of arsenic and lead in New Orleans sediments dumped there by Hurricanes Rita and Katrina. It noted that results obtained by the USGA were in agreement with their results published earlier (*Enviorn. Sci. Tech* **2006**, *40,* 468).

Patricia (Bertoluci) Dare (Ph.D.'97) visited **Dr. Julie Harmon** and others on campus. She is now Senior Business Development Manager at Lockheed-Martin in Huntsville, AL. Her son, **Hunter,** is almost 4.

Marion T. Doig III (Ph.D. '73), Professor of Chemistry, College of Charleston, was a contributor at SERMACS-2006, where we had a good visit.

Eric E. Dueno (Ph.D.'04), Associate Graduate Coordinator and Assistant Professor of Chemistry, Eastern Kentucky U, presented the 26th Annual Arthur

Sweeney Lecture at Lehman College, the City University of New York, on November 2nd. His title was "Explosives: the Chemistry of Energetic Compounds: A Historical and Synthetic perspective."

Scott G. Fleischman (M.S. '02) **,** Honeywell International, Inc., is the co-inventor of US Patent 7, 080668 B2 (July 25, 2006), "adapter for dispensing liquid into a container."

Bart Heldreth (Ph.D. ' 04) is a Technical Specialist at Sterne, Kessler, Goldstein, and Fox, a top intellectual property law firm in Washington, D.C.

Dr. and Mrs. P. Calvin Maybury have moved to 459 Simpson Street, The Villages, FL 32162. He was the Department's first Chairman and served as a faculty member 1961-1987.

Brenda L. McIntyre, M.D., F.A.A.P. (M.S. '91) is a pediatrician with Treasure Coast Community Health,. Inc., Fellsmere, Florida.

Matt McKenzie (B.A. '03) a doctoral candidate in chemistry at LSU is spending a one-month internship at GSK in Harlow, United Kingdom. He is working with **Drs. Nick Barton and Andrew R. Leach** in the Computational Drug Discovery Department.

Dr. and Mrs. Jay Worrell have moved from Tallahassee to 77 Lantern Lane, Shippensburg, PA 17257. **Dr. Worrell** is Professor of Chemistry Emeritus, having served 1967-2002. **Mrs. Louise Worrell** was also employed in the Department for many years.

What are they up to?

Please look at our web page ("Graduate Alumni") and see if you (and or your friends and fellow alumni) are accurately listed. It is hard to keep up with the growing list of alumni (would you believe over 275 graduate alumni). We would be grateful if you could bring us up-to-date on what you or some of your friends are doing.

News and feedback

For additional information on faculty, staff, students, and programs, please look at our Department Home Page : http://www.cas.usf.edu/chemistry

For past issues you may have missed, please see our Home Page.

News for us or comments? Please write to dmartin@cas.usf.edu