LSU

College of Basic Sciences e-Newsletter

October-November Edition 2008

The *College of Basic Sciences e-Newsletter* is published six times yearly and is distributed to all faculty and staff in the College of Basic Sciences and to a larger subscription list of administrators, alumni, and friends of the college.

If you know someone who should be receiving the e-Newsletter and is not, please send their contact information and e-mail address using the link below. Articles and ideas for the e-Newsletter should be sent to **bascdean@lsu.edu**. Please include hyperlinks when possible.

Thanks to all who provide the items for this newsletter.

NEWSLINKS

The hyperlinks below are direct your Internet browser to the web pages for the departments and the museum. News highlights also appear on the college's Home Page:

Biological Sciences
Chemistry
Computer Science
Geology & Geophysics
Physics & Astronomy
Museum of Natural Sciences

The Calendar of Events is on the last page for this issue.

NOTES FROM 338

Dear Colleagues and Friends,

LSU is moving ahead aggressively with its National Flagship Agenda – and the College of Basic Sciences is front and center in those efforts. As an example, below we highlight the first group of hires associated with the Materials Science Multidisciplinary Hiring Initiative, which features NAS member Ward Plummer. Other MHI hires are currently being pursued and we hope to announce additional signings in the near future. We are also proceeding with nine "traditional" faculty searches that encompass all five BASC departments. That said, it is likely that the state of Louisiana will not be immune to the revenue challenges that are emerging across the country as a result of negative economic trends. Potential shortfalls in the state budget will almost certainly be the subject of much speculation and rumor in the weeks and months ahead. We expect to get a tangibly clearer perspective on the state's budget when the Revenue Estimating Committee reports, probably sometime in late January 2009. Regardless, I will endeavor to keep you informed of any significant developments. For now, I encourage you to remain focused on the many recent positive developments in our College and throughout LSU and on the longer-term goals of excellence to which we aspire.

There is a new search for the Gordon A. Cain Chair in STEM, which is supported by a $3M endowment. I'm chairing the search committee, which includes Bill Wischusen (Biological Sciences) - as well as representatives from Mathematics, Education, the Cain Center, and the Board of Regents. I encourage you to forward the names of potential candidates to Bill or me.

Joel Tohline (PHYS) and I are co-chairing the search committee for the new CCT Director. Basic Sciences is well represented on the 19-member committee, including Thomas Sterling (CSC), Bin Chen (Chem), Mark Jarrell (PHYS), and Mark Batzer (BIOL). Please contact any of these folks if you have suggestions for potential candidates.

Provost Merget has been hosting a series of meetings with deans and other administrators to discuss the issue of diversity among our faculty and students. While LSU and BASC have arguably made progress in this area in recent years, we still have far to go. There are no magic bullets that will solve this complex issue, but it is clear that progress will require engagement of faculty and administration at all levels. You will be hearing more on this topic in the near future, but I welcome your input and creative suggestions on how we can qualitatively and quantitatively enrich our scholarly programs by embracing diversity.

Cheers, Kevin C.

KUDOS

Mark Batzer, Mary Lou Applewhite Professor of Biological Sciences, was named Boyd Professor, the University's highest academic rank. He is the 66th LSU System faculty member to receive this honor.

Meredith Blackwell, Boyd Professor (Biological Sciences) was the inspiration for the name of a new species of yeast *Candida blackwellae* found in beatles in recognition of her contributions to the study of fungi associated with arthropods.

Barry Dellinger, Patrick Taylor Chair of Hazardous Waste (Chemistry) isolated a new class of particles called "persistent free radicals" that when bonded with pollution in the air could lead to diseases similar to those that affect smokers, such as thoracic cancer.

S. S. Iyengar, Roy Paul Daniels Professor and Chair (Computer Science) presented an invited workshop on Sensor Networks at the Second International Conference on Mobile Ubiquitous Computing, Systems, Services and Technology (UBICOMM 2008) held at Valencia, Spain.

Don Kraft (Computer Science, retired) was named to the advanced-grade level of Distinguished Engineer/ Scientist Member of the Association of Computing Machinery (ACM).

Luis Lehner and **Gabriela Gonzalez** (Physics & Astronomy) have been invited to participate in the 11th Annual Japanese-American Kavli Frontiers of Science symposium cosponsored by the Japan Society for the Promotion of Science and the U.S. National Academy of Sciences.

Jorge Pullin, Hearne Chair of Theoretical Physics, was named Interim Co-Director of the LSU Center for Computation and Technology (CCT). Pullin is also featured in a September article of *Foundational Questions in Physics & Cosmology* ($fq^{(x)}$) highlighting his long collaboration with Rodolfo Gambini at the University of the Republic in Montevideo Uruguay, aimed at unraveling the mystery of gravity and how it reconciles with modern quantum mechanics.

George Stanley, Cyril and Tutta Vetter Louisiana Fund Alumni Professor (Chemistry) co-chaired the annual Super Science Saturday held as part of National Chemistry Week. The event featured several graduate students in chemistry demonstrating basic chemistry principles to students from the Baton Rouge area.

Thomas Sterling, Seola Arnaud & Richard Vernon Edwards Jr. Professor (Computer Science/CCT) was featured in collaboration with students in the Czech Republic during the Annual Meeting of the Internet2 Community in New Orleans in October. The research collaboration was shown during a live video conference using dynamic circuit networking (DCN) and UltraGrid HD video conferencing technologies.

MARQUEE PUBLICATIONS

D. Uskov and **A. R. P. Rau (Physics & Astronomy)**: "Geometric phases and Bloch-sphere constructions for SU(N) groups with a complete description of the SU(4) group," *Physics Review* A 78, 022331 (2008), provides a geometrical view of two-spin quantum systems. The quantum system of a pair of spins (qubits) lies at the heart of quantum computing, quantum cryptography and related areas of current research. This paper develops a geometrical picture for the time evolution of such systems that closely parallels a similar picture, called the Bloch-sphere, which has been very influential over the decades for the quantum mechanics of a single spin in magnetic fields.

PATENTS ISSUED

Robert Hammer (Chemistry), with Francis Barany (Cornell Research Foundation) and George Barany (Univ. of Minnesota), "Detection of Nucleic Acid Sequence Differences Using Coupled Ligase Detection and Polymerase Chain Reactions," US Patent No. 7,429,453, September 30, 2008.

Albert Meier (Zoology, retired) and **Anthony Cincotta** (MS, Physiology, 1982; PhD Physiology, 1985; Cayuga Consulting), "Process for the Long Term Reduction of Body Fat Stores, Insulin Resistance Hyperinsulinemia and Hyperglycemia in Vertebrates," European Patent No. 0917874, April 9, 2008 and Greek Patent No. 3065871.

Steve Soper (Chemistry), with Ren Yang and Wanjun Wang (Mechanical Engineering), "Integral Pre-Aligned Micro-Optical Systems," US Patent No. 7,421,159, September 2, 2008.

NEW GRANT FUNDING NOTICES

BIOLOGICAL SCIENCES

Mark Batzer, "Determinants of Human Longevity and Healthy Aging," Tulane Health Sciences Center., July 2008 through June 2009, $136,243.

David Donze, "RNA Polymerase III Transcription Factor Complexes as Chromatin Boundary Elements" National Science Foundation, September 1, 2008-August 31, 2011, $480,000.

Thomas Moore and Co-PI **Terry Bricker**, "Graduate Fellowships in Biological Sciences at Louisiana State University," BOR, August 2008 through July 2013, $200,000.

James Moroney, "The CO2 Concentrating Mechanism of *Chlamydonomas Reinhardtii*," NSF, September 2008 through August 2010, $376,065.

William Platt, "Tall Timbers Research Station Research Assistantship," Tall Timbers Research Station, August 2008 through July 2009, $18,000.

James Remsen, "Global Forest Society," Global Forest Science, May 2008 through June 2009, $2,000.

Several BASC faculty members received $1000 grants from the Office of Environmental Education:

Bruce Williamson and Co-PI J. Deichmann, "A comparison of Herpetofaunal Biomass across the Amazon Basin."

Andrew Whitehead and Co-PI R. Stevens and E. McCulloch, "Effects of habitat fragmentation in Atlantic forest on genetic structure and diversity in *Artibeus lituratus*."

William Whitehead and Co-PI E. Leichty, "Importance of Avian Granivoryin Pine Savanna ground-layer plant communities."

William Platt and Co-PI R. Crandall, "Persistence of woody reseeders and resprouters (Hypericum spp.) along fire requented ecoclines of the northern Florida Gulf Coast."

William Platt and Co-PI D. Kandalepas, "Hurricane Demetra reduces endophytic fungal diversity in wetland plants."

William Platt and Co-PI B. Carmichael, "Aliens in our midst: Examining the effects of fire, localized disturbance, and nutrients on *Lygodium japonicum* invasion in a longleaf pine savanna."

Kenneth Brown and Co-PI B. Aronhime, "Variation in predator diversity in bivalve survival along a salinity gradient."

Kenneth Brown and Co-PI W. Daniel, "Influence of freshwater mussel fauna (Unionoida) on Amite River fish and macroinvertebrate density and diversity."

Fernando Galvez and Co-PI D. Dubansky, "Host's physiological response to larval mussel (glochidia) infestation."

Kyle Harms and Co-PI J. Myers, "Trait-based mechanisms influencing community assembly in a fire-frequented, high-diversity ecosystem."

CHEMISTRY

Carol Taylor, "Theonellamides: vacuole for discovery", NSF, August 2008 through July 2011, $348,311.

Andrew Maverick, "2008 UNCF Merck Undergraduate Science Research Scholarship Award," UNCF-Merck, August 2008 through May 2009, $25,000.

Kermit Murray, "Development of procedure for mass spectrometry analysis of bacteria samples," IONWERKS, May 2008 through August 2008, $5,755.

George Stanley, "Graduate Fellowships in Chemistry for 2008," BOR, August 2008 through July 2009, $232,000.

George Stanley and Co-PIs **Carol Taylor** and **Donghui Zhang** (Chemistry), Polarimetry, Optical Rotary Dispersion and Reaction IR Spectroscopic Equipment," BOR, June 2008 through June 2009, $129,265.

Donghui Zhang, "Polymer-directed self-assembly of carbon nanotubes for materials applications," BOR, June 2008 through June 2011, $123,318.

COMPUTER SCIENCE

Gabrielle Allen and Co-PI **Tevfik Kosar** (CSC/CCT), "SURA Coastal Ocean Observing and Prediction Program," Southeastern Universities

Research Association, July 2008 and December 2008, $63,251.

Sundaraj Iyengar and Co-PIs **Seung-Jong Park** (CSC/CCT) and H. Wu (Electrical Engr.), "Secure and Survivable Cyber-Centric Sensor Networks: Algorithms and Architecture Research," Department of the Navy, April 2008 through December 2011, $761,368.

Thomas Sterling (CSC/CCT), "A system Architecture Point Design Study for Exascale Computing," NSF, September 2008 through August 2010, $198,677.

Thomas Sterling (CSC/CCT) and Co-PIs **Luis Lehner** and **Joel Tohline** (Physics & Astronomy), "Collaborative Research: A study and implementation of semantic constructs for highly scalable leading edge scientific computing," NSF, August 2009 through August 2009, $70,000.

GEOLOGY & GEOPHYSICS

Jeff Nunn and Co-PIs Eugene Turner (Oceanography) and V. L. Wilson (Environmental Sci.), "Recruitment of superior graduate students in Earth, Ocean and Environmental Studies," BOR, August 2008 through July 2013, $96,000.

Huiming Bao, "Experimental Sulfate-Triple Oxygen Isotope Geochemistry," ACS, July 2008 through August 2010, $100,000.

MUSEUM OF NATURAL SCIENCE

Robb Brumfield (MNS/Biological Sciences) and Co-PI M. Carling, "The role of the Z-chromosome in the reproductive isolation of *Passerina butinggs* (Aves: Cardinalidae)," NSF, July 2008 through June 2009, $12,000.

PHYSICS & ASTRONOMY

Philip Adams and Co-PIs **John Ditusa** and **David Young**, "Upgrade of the LSU Helium Liquefier Facility," BOR, June 2008 through June 2009, $656,764.

Jeffery Blackmon and Co-PI **Edward Zganjar**, "The LSU-FSU Array for Nuclear Astrophysics Studies with Exotic Nuclei," NSF, September 2008 through August 2011, $308,220.

Jeffery Blackmon, "The Structure of Nuclei far from stability," DOE, April 2008 through March 2009, $160,000.

Jeffery Blackmon, "Development of a novel prototype detector of low energy neutrinos," BOR, June 2008 through June 2011, $153,413.

Amy Campbell is Co-PI with Nell McAnelly (Mathematics), "Project TEAMS: Central Community School System," Central Community School System, February 2008, $66,175.

Michael Cherry and Co-PIs **Dana Browne** and **Kenneth Hogstrom**, "Graduate Fellows in Physics and Astronomy and Medical Physics," BOR, August 2008 through July 2013, $390,000.

Michael Cherry and Co-PIs **Greg Guzik**, **J. Greg Stacy** and P. Borne Blanchard (Secondary Education), "Science Teacher training using Astrophysics Research," BOR, June 2008 through June 2010, $188,611.00.

Jeffery Clayton and Co-PI W.R. Freeman, "Infrared Emission from Red Supergiants," NASA, August 2008 through August 2009, $5,000.

Jeffery Clayton, "Understanding the dust shells around magellanic cloud red supergiants," Cal Tech Jet Propulsion Lab, July 2008 through June 2010, $45,188.

John Ditusa, "Doping dependent transition from paramagnetism to ferromagnetism in semiconductors," NSF, August 2008 through July 2012, $472,000.

John Ditusa, "Inelastic neutron scattering investigations of magnetic semiconductors at Oak Ridge National Laboratory," BOR, August 2008 through October 2008, $4,000.

Jonathan Dowling, "Quantum Technologies for Space Applications," BOR, July 2008, $6,000.

Thomas Kutter, "Development and Test of Pixelated CdZnTe Detectors for use in Neutrinoless Double Beta Decay Experiments," BOR, June 2008 through June 2011, $141,807.

Richard Kurtz and Co-PIs J. Flake (Chem Engr), **Jayne Garno** and **Robin McCarley** (Chemistry), W. Meng (Mech. Engr.), and **Phillip Sprunger** (Physics & Astronomy), "Acquisition of a variable-temperature SPM for Multidisciplinary Materials Research and Education," BOR, June 2008 through June 2009, $298,400.

Arlo Landolt, "UBVRI Photometric Standard Stars," NSF, August 2008 through July 2013, $886,861.

Luis Lehner and Co-PI Erik Schnetter (CCT), "Interfacing the paramesh computational libraries to the Cactus computational framework", NASA, April 2008 through January 2010, $213,043.

William J. Metcalf, "Water-Based Neutron Detection Research," Lawrence Livermore Lab, May 2008 through August 2008, $18,326.

Daniel Sheehy, "Superfluidity and strong correlations in ultracold atomic gases," BOR, June 2008 through June 2011, $136,626.

Edward Zganjar, "Andreas Piechaczek Agreement," Oak Ridge Associated Universities, August 2008 through September 2008, $9,800.

DEVELOPMENT & FUNDRAISING UPDATE

Ron and Mary Neal of Houston Texas have made a gift of $500,000 to the college to create two professorships in Biological Sciences that will support a faculty member and graduate students. In addition, the gift creates a *Science Honors Scholarship* to support Basic Sciences undergraduates who are also in the Honors College, and it provides unrestricted support funds for both the Department and the Dean. The Neals will be recognized at a reception November 7th in the Department of Biological Sciences.

Jerry and Nancy Dumas of Houston Texas have made a gift of $360,000 to the Department of Chemistry to establish a professorship that will support Chemistry graduate students. This gift is part of an overall gift of $2 million to the University.

Halliburton Corporation made a gift of $10,000 to the Department of Geology & Geophysics to support the Halliburton Field Camp Scholars Scholarship Fund.

Ms. Betsy Mellor made a gift of $5,000 to the Ted Parker Memorial Fund in the Museum of Natural Sciences in memory of Mr. Parker.

Shell Oil Company has made a gift of $35,000 to the Department of Geology & Geophysics to support the ADG Support Fund and the SURGE (Shell Undergraduate Recruitment and Geoscience Education).

The **Patrick F. Taylor Foundation** has made a gift of $18,000 to the College to continue supporting four scholarships in the Department of Chemistry and two in the Department of Geology & Geophysics.

COMINGS AND GOINGS

As part of a major expansion of LSU's materials science program, six new faculty members have joined the Department of Physics & Astronomy in the area of condensed matter and materials science:

Associate Professor **Shane Stadler** (experimental condensed matter, with a joint appointment at CAMD) and Assistant Professor **Juana Moreno** (theoretical and computational material science, with a joint appointment at CCT) joined the department in August 2008. Both are the recipients of NSF CAREER grants.

Mark Jarrell (January 2009) will join the program in computational material science with a joint appointment at CCT. Professor Jarrell is a Fellow of the American Physical Society and will act as head of the Materials World focus area at CCT. His appointment is also associated with the LONI Institute and the Materials Science Multidisciplinary Hiring Initiative.

Professor **Ward Plummer** (January 2009) is a member of the US National Academy of Sciences and currently Distinguished Professor of Physics and Director of the Tennessee Advanced Materials Laboratory at the University of Tennessee, and Distinguished Scientist at the Department of Energy's

Oak Ridge National Laboratory. He is the holder of numerous honors including Fellow of the American Physical Society and the American Vacuum Society. He has been awarded the Davisson-Germer Prize of the American Physical Society and the Medard W. Welch Award of the American Vacuum Society.

Professor **Jiandi Zhang** and Associate Professor **Rongying Jin** (January 2009) conduct research in experimental materials science. Professor Jin has been awarded the Excellent Young Scientist Award from the Chinese Academy of Science and the IBM Corporation Rising Star of Technology Award, and Prof. Zhang is the recipient of an NSF CAREER award.

The College of Basic Sciences and Department of Chemistry welcome Professor **John Harkless**, a visiting professor from Howard University. Harkless is one of two faculty members visiting LSU this semester as part of the Historically Black Colleges and Universities Visiting Faculty Program.

William A. Pryor Professor of Chemistry **Robert Hammer** accepted a position with New England Peptide as of November 1, 2008. Dr. Hammer joined LSU in 1992 and served the department, college, and university with distinction in all capacities. We wish Bob, Karen, and his family all the best as he pursues his new career in the private sector.

Dr. Ashley Junek has accepted a position as Assistant Dean in the E. J. Ourso College of Business. Ashley has served the College with distinction as a student counselor for many years. We wish her well in as she pursues this new career opportunity; she will be greatly missed.

The College's Office of Alumni & Donor Relations welcomes **Eric Guerin** as an associate director of development. Eric is an LSU alumnus with a degree in general students. He was active in many student programs during his undergraduate studies including STRIPES. Eric comes to us from the March of Dimes, and he will work closely with the Departments of Biological Sciences and Chemistry.

KEEP THE GOOD NEWS COMING TO US

BASCDEAN@LSU.EDU

CALENDAR OF EVENTS

November 27-28	Thanksgiving Holiday	(University offices closed)
December 3-7	Concentrated Study Period	
December 6	Classes end	
December 8 - 13	Final Exam Period	
December 19	Commencement	