



**December 11 – December 17, 2011**

### **LSU Receives \$1 Million to Explore New Energy Source from Reservoir Heat Extraction**

A group of LSU researchers is conducting innovative research to harvest heat from geothermal reservoirs to generate electricity. The proposed method couples forced convection (*the movement of molecules within fluids*) through long, near-horizontal wellbores with free convection arising from natural geothermal gradients.

Christopher White, associate professor, and Mayank Tyagi, assistant professor, both of the LSU Craft and Hawkins Department of Petroleum Engineering and the Center for Computation & Technology (CCT), along with other LSU researchers, were awarded a grant for \$997,333 from the U.S. Department of Energy for the project "Zero Mass Withdrawal, Engineered Convection, and Wellbore Energy Conversion."

Compared to conventional geothermal development strategies, engineered convection improves thermal recovery efficiency and delays thermal breakthrough of heat-depleted geofluid at the heat extraction point. Computer simulations indicate that the engineered convection strategy could be effective for the saline aquifer temperatures, thicknesses, extents, permeabilities, and dips that are common in the U.S. Gulf Coast region.

"Low-cost, environmentally benign geothermal energy could boost the economy of the region, especially in socioeconomically disadvantaged areas and remote areas with poor electric power transmission and transportation infrastructure, such as the coastal wetlands," said White, principal investigator of this project.

The engineered convection strategy could provide robust, modular power with individual wells contributing hundreds of kilowatts up to megawatts in net electric power. This could add up to a regional capacity of tens of gigawatts by the year 2050.

"Engineered convection geothermal systems could be made robust with respect to floods and storms by placing some of the energy conversion components in the wellbore, providing valuable emergency and post-hurricane distributed power. In-wellbore generation could also reduce the surface facilities footprint, reducing noise and potentially reducing water requirements," said White.

Also participating in the project are Arash Dahi Taleghani, Richard Hughes, and Mileva Radonjic, LSU Craft and Hawkins Department of Petroleum Engineering; Jeffrey Hanor,

LSU Department of Geology & Geophysics; Chacko John, Louisiana Geologic Survey; Mark Kaiser, LSU Center for Energy Studies; Fahui Wang, LSU Department of Geography & Anthropology; and Blaise Bourdin, LSU Department of Mathematics.

For more information on LSU's College of Engineering, visit: [eng.lsu.edu](http://eng.lsu.edu).

For more information on this or other research being done at the CCT, visit: <http://www.cct.lsu.edu/home>.

### **CCT in the News:**

#### **Five LSU Faculty Named AAAS Fellows**

**Source:** [LSU Office of Communications & University Relations](#)

### **Pats on the back:**

Congrats to Michael Khonsari, one of five LSU researchers who have been honored with the rank of "Fellow" by the American Association for the Advancement of Science, or AAAS, the world's largest scientific organization. He was honored for his distinguished contributions to multidisciplinary scientific research and development particularly in the field of tribology and for outstanding leadership in building research infrastructure across the state of Louisiana.

### **Please Note:**

- If you or your group is interested in showcasing at the 2012 TechPawLooza Event on March 14<sup>th</sup>, which is held on campus in the Union Ballroom, please contact Karen Jones ([kjones@lsu.edu](mailto:kjones@lsu.edu)). If you wish to reserve a space, submit a small summary of your display, and any electrical and/or internet needs by January 13th.
- The CCT STE||AR Group is proud to announce the second formal release of HPX (V0.7.0). This release has been made possible by the hard, dedicated, and diligent work of everybody involved. HPX (High Performance ParalleX) is the first freely available, open source, feature-complete, modular, and performance oriented representation of the ParalleX execution model targeted at conventional architectures and, currently, Linux based systems, such as SMP nodes and conventional clusters. The most important design objective of HPX is to create a state-of-the-art parallel runtime system providing a solid foundation for UHPC-scalable applications while remaining as efficient, as portable, and as modular as possible. For more information about HPX (and ParalleX in general), please visit <http://stellar.cct.lsu.edu>. We update this website often, so please come back regularly.
- The LSU Faculty Colloquium, sponsored by the Office of Academic Affairs and the LSU Retention Committee, will be held on January 10<sup>th</sup> from 1 to 4:30 pm in Coates Hall 143 and followed by refreshments, group discussion, and response session. Dr. Janet Zadina, cognitive neuroscientist and 2011 winner of the Education in

Neuroscience Award, will present “Using Brain Research to Orchestrate Learning: The Multiple Pathways Model.” *Dr. Zadina has made outstanding contributions to the field of neuroscience education and training. Her research has investigated the neuroanatomy of dyslexia through collaboration with Tulane University School of Medicine.* Through the colloquium and related discussion, faculty members will learn about principles and strategies for effective instruction that are derived directly from brain research. These new approaches to teaching have been shown to increase classroom engagement and student learning which in turn increases student retention. This is a must-attend event for faculty and staff who want to reconsider their approaches to helping today’s students learn more effectively. Please click on <http://appl027.lsu.edu/comp/surveyapp.nsf/survey?OpenAgent&id=academicaff> by Dec. 16 to reserve a spot. The colloquium offers a great opportunity to begin 2012 with some new classroom strategies.

- On February 9<sup>th</sup> from 3:00pm-4:30pm in the LSU Student Union Capital Chamber Room, Equity, Diversity & Community Outreach and the Office of the Ombudsperson is pleased to announce the 6<sup>th</sup> Annual Spring Faculty Enrichment Series on: “Workplace Harmony: Creating Civil and Appreciative Cultures in Stressful Times,” which will feature experts speaking on the importance of creating civil work environments, working through differences and conflicts, and managing internal and external stressors from both an individual and collective perspective. This session is recommended for all faculty, staff, and graduate assistants and highly recommended for faculty and administrators with supervisory and/or human resource functions. For early registration, please visit: <http://www.surveymonkey.com/s/SFES2012>.
- The newly released 2011 *Components* can be found at: <https://www.cct.lsu.edu/site256.php>
- We are pleased to launch a bi-weekly CCT Tech Talk Series to promote hardware design, software and tools development, and research enablement efforts at CCT. We hope to enable and facilitate more development and effective use of advanced cyberinfrastructure (CI)-based computational science tools to significantly boost innovation and discovery in all disciplines and interdisciplinary fields across LSU. The goals of this series are to encourage inter-group collaborations, incubate new projects, and seek funding opportunities for multi-disciplinary collaborative research. As mentioned above, incubating new projects is one of our goals of the planned talks. Currently, there are two projects for which several of the researchers at CCT are seeking campus wide collaboration:
  1. Domain specific language and equation description language for code generation.
  2. Large scale DG-FEM programming framework on unstructured meshes.
 Please contact Honggao Liu ([honggao@cct.lsu.edu](mailto:honggao@cct.lsu.edu)) if you are interested in either of the projects or you are incubating a new project.
- Submissions for the 2012 Red Stick International Animation Festival are now being accepted thru January 6<sup>th</sup>. Visit <http://www.redstickfestival.org/competition/submissions/> for details.

- Prior approval is required for Special Meal Requests. Employees who make meal purchases without prior approvals may find that they must cover the cost of any monies spent for an unapproved event out of pocket. Dine-in restaurant meals are not allowed on LaCarte credit cards. Please contact Susie McGlone ([susie@cct.lsu.edu](mailto:susie@cct.lsu.edu)) prior to any special meal with visitor(s) to file the appropriate request for approval. Prior approval could take up to two weeks, so please plan accordingly.
- Please remember to send your news concerning grants, awards, conferences, or other pertinent information to CCT Event Coordinator Jennifer Fontenot at [jennifer@cct.lsu.edu](mailto:jennifer@cct.lsu.edu)
- Follow CCT with social media to access photos and see news, events or updated information. These pages are public; you do not need an account to view the information.
  - [Facebook group](#) : LSU Center for Computation & Technology
  - [Twitter](#) : LSUCCT
  - [YouTube channel](#) : LSUCCT

#### **Interest groups:**

- **MAG (Mobile App-Art-Action Group):** Everyone interested in the potential for Mobile Apps is invited to come and add their vision for these revolutionary devices.
  - Contact: Jesse Allison ([jtallison@lsu.edu](mailto:jtallison@lsu.edu))
- **GPU:** meets weekly (Wednesdays @ 2:30 pm in 338 Johnston) and encourages participation from anyone who would like to join in the discussions. Join the mailing list: [lasigma-gpu@loni.org](mailto:lasigma-gpu@loni.org)
  - Contact: Bhupender Thakur ([bthakur@cct.lsu.edu](mailto:bthakur@cct.lsu.edu))

#### **Upcoming events:**

Thru January 6, 2012: [Red Stick International Animation Festival “Best of the Fest” accepting entries](#)

January 20-21, 2012: [Scientific Computing Around Louisiana Workshop](#)

Thru March 1, 2012: [REU-Materials science accepting entries](#)

April 15-17, 2012: [Symposium on Laptop Ensembles & Orchestras](#)

#### **Upcoming Grant Deadlines:**

**Note:** Please check the [CCT deadline Web site](#), since it is updated daily.

[Software Infrastructure for Sustained Innovation \(SI2\) Scientific Software Innovation Institutes \(S2I2\)](#)

December 14, 2011 10:00 am

At least \$500,000.00 available