



## First Lady Jindal Launches Non-Profit Foundation

Louisiana First Lady Supriya Jindal launched a nonprofit foundation for children that will focus on improving math and science scores on Monday, March 31<sup>st</sup>. She then traveled to north Louisiana on Wednesday, April 1<sup>st</sup> to talk about "Bringing Technology to Louisiana's Classrooms." At AE Phillips lab school, First Lady Supriya Jindal worked with LA Tech NSF GK12 Teaching Fellows in engaging 68 first and second graders in an inquiry-based lesson on magnetism called, "What's my Pole?"

Teaching Fellows said First Lady Jindal was a natural teacher. Steven Bearden (PhD candidate in Chemical Engineering) and First Lady Jindal worked together and he had commented that she was engaging the students far better than he was. Kellie DeRouen Duhon, Chief of Staff and Executive Assistant to the first lady stated; "Thank you guys so much for preparing such a great lesson for the kids. We had a great time!"

Dr. Mills firmly believes our GK12 program is a great vehicle for training future scientists and engineers. "We put together a great activity in a very short time, were fearless in engaging elementary students whom they had never worked with before, and their effort was seamless in its delivery. The teachers and Dr. Wiggins at AE Phillip's invited us to come back anytime."

Dr. Mills said "Our Teaching Fellows did a fantastic job today! I am so proud of them!!"



**Pictured** First Row:L-R: Stephanie Tulley-Ortez (PhD candidate-Biomedical Engineering), First Lady Supriya Jindal, Dr. David K. Mills, Brittany Wilson (PhD candidate-Engineering), Katie Bearden (PhD candidate-Engineering). Second Row:L-R: Daniel Moller (PhD candidate-Biomedical Engineering), Shantanu Balakundi (PhD candidate-Engineering), Steven Bearden (PhD candidate-Engineering) and Jason Howard (MS candidate-Biomedical Engineering)

### Inside this issue:

<i>Top Dawg</i>	2
<i>NSF Career Award</i>	3
<i>Faculty Honored with Luncheon</i>	3
<i>Professional Dream Realized</i>	4
<i>Abstracts Rate High</i>	4
<i>LASPACE Fellowships</i>	5
<i>Spring Nano Seminars</i>	5
<i>1st Annual Publication Awards</i>	5

### Special points of interest:

- Nanotechnology
- Biotechnology
- Biomedical Nanotechnology
- Environmental Technology
- Information Technology

### Newsletter Editor

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Comments are welcomed!



## IfM Graduate Student Wins First Place in TOP DAWG Business Plan Competition



First place in this years TOP DAWG Business Plan Competition went to “Oilfield Diagnostics”, a new form of offshore pipe and platform inspection, (La Tech IP) Karren Lovelady, GraphicDsgn/MKT; Noah Bergeron, PhD ENGR;

Oilfield Diagnostics (OD) has developed a new method for conducting offshore oilfield equipment inspections. Offshore oilfield equipment, including production/drilling platforms and underwater pipelines, is required by government and company policy to undergo regularly scheduled inspections. These inspections are carried out by separate, privately owned inspection companies. OD will manufacture a new inspection device designed for the underwater Remotely Operated Vehicles (ROVs) currently operated by inspection companies. These devices will be constructed as modular tools that will be rented out to the inspection companies to perform Flooded Member Detection (FMD) and underwater pipeline inspections.

OD’s modular tool offers a unique and appealing value proposition to the customer, the ROV operator, and their customer, the oilfield platform owner. The current method of FMD

is safer than traditional FMD, and will not damage the pipelines. The device is also able to operate at the same level of performance as existing solutions. “We will be able to leverage experience in FMD and pipeline inspections into new sensors with greater capabilities to perform other novel types of offshore oilfield inspections and diagnostics to retain a sustainable competitive advantage”, Bergeron said.

Fourteen teams competed in the first TOP DAWG Pick of the Litter Idea Pitch on October 20 – 23, 2008. Competitors presented their new venture ideas in five minute pitches to professional judges and the student body. The top ten scoring Idea Pitch teams were invited to compete in the TOP DAWG Business Plan Competition held on February 17, 2009.

Teams occupied temporary offices in the Louisiana Tech Enterprise Center while writing their business plans. Each group was assigned two mentors to advise them through the business planning process. The mentors were Dr. Andrea Drake, Dr. Son Le, Dr. Dave Norris, Dr. Jon Pratt, Ms. Carol Shaver, and Ms. Kathy Wyatt.

\$200 Idea Pitch checks were presented to the teams entering the TOP DAWG Business Plan Competition

during Global Entrepreneurship Week. TOP DAWG Business Plan Competition Prizes awards were: First place with \$4000 to “Oilfield Diagnostics”, Second place with \$2000 went to “Blue Green Fuels” an alternative bio-fuel feed stock or oil that will be used to create bio-diesel, (La Tech IP) Jeremy Pardue, Masters Eng Tech MGMT; Klark Kent, Masters Eng Tech Mgmt; and Third place with \$1000 went to “BruteForce”, an innovative product line of “automated spotting” power lifting equipment, Colin Hosli, EE; David Richard, EE; Mark Mckee, ME.

Other awards included: \$2000 to “Unitext”, an electronic notebook and textbook reader for college students. Blake Hosli, PhD Engr; Shasta Phelps, SPCH for the Jones Walker Entrepreneurial Spirit Award; and \$2000 Ruston-Lincoln Chamber of Commerce “Best Presentation” Awarded to “Oilfield Diagnostics”. The winner also received 6 months temporary La Tech Enterprise Center incubator space

TOP DAWG supporting sponsors for the competition were the College of Business \$2500, College of Engineering and Science \$2500, Student Organization Grant \$2000, Center for Entrepreneurship and Information Technology, and Association of Business, Engineering, and Science Entrepreneurs (ABESE) student group.

A special thank you to Debbie Inman (CENIT) for supplying information for this article.



## Dr. Tabbetha Dobbins Receives NSF CAREER Award



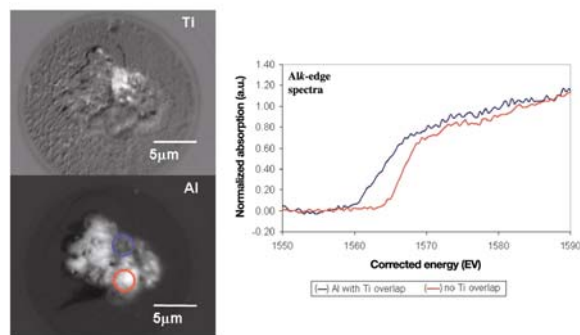
One of the most prestigious awards given in support of junior faculty, was bestowed upon Dr. Tabbetha Dobbins, Assistant Professor of Physics and joint faculty with Louisiana Tech University and Grambling State University. Quoting Lynnette Madsen, Program Director for Ceramics at the National Science Foundation, in the American Ceramic Society Bulletin, “CAREER awardees exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research”.

“The objective of Dobbins’ CAREER award is to un-

derstand the mechanisms of the enhancement of atomic mobility and desorption rates in metal hydrides by adding transition-metal chloride catalysts. Dobbins hopes her research project will aid in public discourse of on-board vehicular hydrogen storage for fuel cells and electric motors”.

“Dr. Dobbins’ award will support two Ph.D. or four M.S. degree students and 10 undergraduate students. The educational impacts include two new courses, a design project in vehicular hydride storage tanks and science fair projects. The high school programs will collectively be called Project ENERGY (Exploring New Energy Alternatives Relevant to Generation Y) and project information will be broadly disseminated online ([projectenergy.com](http://projectenergy.com))”.

Dobbins’ CAREER award is jointly supported by the Ceramics Program and NSF EPSCoR.



X-ray photoemission microscopy of titanium-doped NaAlH<sub>4</sub> particles show that the Al k-edge has shifted to a lower energy in the vicinity of titanium-enriched regions indicating titanium–Al alloy formation. This work is supported by NSF Grant No. 0508560 and through the Louisiana State Board of Regents Research and Development Program (Grant No. LEQSF(2005-08)RD-A-20), and is based in part upon research conducted at the Synchrotron Radiation Center, University of Wisconsin-Madison.

## JFAP Faculty Honored with Luncheon

A special luncheon was held at Squire Creek Country Club on April 16 to celebrate the collaboration between Louisiana Tech and Grambling State University. The guest of honor was Dr. Tabbetha Dobbins, who holds a joint appointment between the two neighboring institutions, and is the most recent recipient of the prestigious “Early Career Development Award” (commonly known as CAREER) from the National Science Foundation.

Attending the luncheon from Louisiana Tech were President Daniel Reneau, Vice-President Les Guice,

Dean Stan Napper, and Academic Director of Physics, Lee Sawyer. Grambling was represented by Provost Robert Dixon, Dean Connie Walton, and Physics Department Head Avaine Strong. Also attending as guests of Dr. Dobbins were faculty colleagues Naidu Seetala from GSU, Yuri Lvov, and Ramu Ramachandran from LA Tech.

Dean Napper welcomed the group and said that this was a celebration of the partnership between two institutions in research and education. Dr. Reneau congratulated Tabbetha on her accomplishment and expressed his hope that similar successes will con-

tinue. Dr. Dixon remarked that he was extremely impressed with the education plan that was included in the CAREER proposal which included a 4+1 program through which undergraduate Physics majors at GSU could earn an MS in Applied Physics at LA Tech within a year of completing the BS degree.

Dr. Dobbins thanked administrations of both institutions for the opportunities provided to her as well as the support and mentoring. The NSF award is for \$400,000 for a period of 5 years, supplemented by institutional matches.



## Graduate Student Realizes Professional Dream

*MD in Medicine and PhD in Biomedical Engineering*



Anshul Agarwal – “Double” Doctor. On March 31, Anshul Agarwal defended his PhD dissertation in Biomedical Engineering. Anshul has been associated with IfM for more than 7 years. First in 2004 when he received his MS in Biomedical Engineering for work on Recombinant Hemoglobin for Artificial Blood Substitutes, while working as a Clinical Research Associate at LSU Health Sciences Center in Shreveport. In 2006, he was admitted to the LaTech Biomedical Engineering PhD program and began working on cancer drug nanocapsules in Dr. Yuri Lvov’s group.

Anshul’s work was very successful. He developed new technology for 100-nm diameter polyelectrolyte capsules for cancer drugs Paclitaxel and Tamoxifen with targeted delivery. These achievements were recognized with two publications in prestigious international journals, and in 2008 applied for a US patent jointly with LaTech and Northeastern University’s, Pharmacy Department where some animal testing of these new drug formulations were performed.

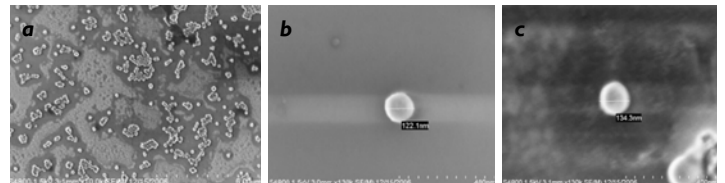
This is a great story and may be typical for a successful IfM grad student. But what makes Anshul different is the fact that during his studies as a LaTech graduate student, he received accreditation of his Medical Doctor’s degree obtained earlier in India (by the US Education Commission for Foreign Medical Graduates) and became a practicing resident physician. For the last two years, Dr. Anshul Agarwal has worked as House Officer at the Department of Family Medicine in clinics and in patient service at LSU Health Sciences Center, Shreveport. At times it was difficult when he had to work literally day and night without Sundays and holidays off, but it was a rewarding time too.

Such close interaction with LSU Medical Center and with the connections with “our man” there, collaboration was very productive. Dr. Yuri Lvov established through Anshul, a close alliance with Dr. H. D’Augustino, Dr. G. Toledo, and extended ongoing work with Prof. J. Cardelli and Dr. C. A. Nathan. Other grad students of Lvov’s group are also involved in these collaborative works.

With research work performed by Anshul in the past three years in parallel with IfM and LSU Health Sciences Center, Anshul Agarwal realized our old dream of an ideal Biomedical Engineer; a person who is a brilliant professional both in medicine and engineering. Now Anshul Agarwal is our “double” doctor! MD and PhD!



*Anshul with wife, Anagha Agarwal, MD, also practicing at LSUHSC.*



*Electron Microscopy Images (a-c) of cancer drug Tamoxifen nanoparticles formed at IfM by Dr. Agarwal.*

## IfM Abstracts Rate High

*Transducers ‘09 The 15th International Conference on Solid-State Sensors, Actuators and Microsystems*

Several representatives from Louisiana Tech University and the Institute for Micromanufacturing (IfM) will participate in the upcoming Transducers 2009 in Denver, Colorado. The dates of the conference will be June 21-25, 2009 hosted at the Sheraton Denver Hotel.

LA Tech was in the top 10 universities at Transducers’09 in terms of the most number of papers accepted: 20:Michigan, Berkeley; 16:Stanford; 11:Georgia Tech; 7:Caltech; 6:**LaTech**, Urbana-Champaign, University of Colorado, MIT, UCLA; 5:Pennsylvania State University, University of Florida, University of California-Irvine, University of Louisville; 4:Northwestern University, Carnegie Mellon, Sandia National Laboratories; 3:University of Wisconsin; 2:Purdue University.

Acceptance rate for oral presentation is ~16% this year from the total of 1306 abstracts submitted worldwide and La Tech ranked in this category as well.

A follow-up story will be published in a future newsletter. For more information please peruse the website at <http://www.transducers09.org/>



## IfM Ph.D. Students Receive LASPACE Fellowships

Ph.D. students in Dr. Chester Wilson's group, Noah Bergeron and Joshua Brown and Ph.D. student Matthew Hartmann from Dr. Ville Kaajakari's group, have been awarded fellowships through the Louisiana Space Consortium. These fellowships, sponsored by NASA and the Louisiana Board of Regence, provide the student with a stipend of \$25,000 per year for a period of up to five years. They are awarded competitively based on merit and the student's potential to impact the space and aerospace industries. The three awards represent the largest quantity of these fellowships awarded in LaTech history. The IfM is proud to have these students affiliated with the Institute.



Matthew Hartmann



Standing on the Louisiana Tech University Logo in the Biomedical Engineering Center Rotunda, Dr. Chester Wilson's Research Group: Back Row: L-R: Randy Waguespack, Daniel Scoggins, Blak Hosli, John Sweeney; Middle Row: L-R: Karren Lovelady, Scott Pelligrin, Heath Berry, Josh Brown, John McDonald; Front Row: L-R: Laura Ames, Megan Zettlemayer, Dr. Chester Wilson, Noah Bergeron, and Chad Whitney.

## Spring 2009 Seminar Series IfM Auditorium

*Functional Nanoassemblies:  
Fundamentals and Applications*  
Chaired by: Tabbetha Dobbins,  
Yuri Lvov, David Mills

**April 01: 2:00 p.m.** Vladimir Kolesnichenko, Galina Goloverda, Xavier University, New Orleans, "Synthesis of Magnetic nanoparticles with Controlled Surface Chemistry"

**April 14: 2:00 p.m.** Pravin Pattekari, H. Zhu, J. Jacob, P.S. Sit, (BME/LSUHCNO), "Development and Material Characterization of a Novel Methacrylate-Containing Hydrogel for Corneal Applications"

**April 28: 2:00 p.m.** Dustin Green, Mark DeCoster, BME/IfM "nano-Printing for Cell Directing"

**May 12: 2:00 p.m.** Stephanie Tully-Dartez, Henry Cardenas, PI S. Sit, BME/MEEN/Nano Engineering, "Micro and Nano Structural Characterization of Tissue Engineered Scaffolds"

Seminars Return Fall 2010

## 1st Annual Publication Recognitions

IfM held its 1st annual competition for the best published, peer reviewed paper and book. Criteria for evaluation was to be the journal impact factor with 50% or more of Louisiana Tech University faculty co-authoring the nominated paper. Results of the competition were to be approved by the IfM Leadership Team with awards to be presented at a future IfM meeting.

Twenty-five publications were submitted for the competition and winners chosen on March 12, 2009, with awards to be presented on April 17, 2009.

Winners were:

Special recognition was given to Dr. Ville Kaajakari for his book, "Practical MEMS", 2008. His book exemplifies his renowned expertise in the field and serves to champion IfM's prominence as well.

Dr. Mark DeCoster for his chapter "Nuclear Area Factor", in the book, *Modern Research and Education in Microscopy 2008*

Dr. Sandra Selmic (et al), for her peer reviewed paper "Doping poly[2-methoxy-5-(2'-ethylhexyloxy-1,4-Phenylenevinylene)] with PbSe nanoparticles or fullerenes" in the *Journal of Physics: Condensed Matter, 2008*

We'd like to thank Dr. Yuri Lvov for establishing the competition and recognize that he also had publications with high impact factors, but as organizer of this event, conceded(abstained) from the competition.



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## Vision and Mission

The vision of the IfM is to be a world-class resource for the realization of commercially-viable micro- and nano-systems, contributing to the economic infrastructure of Louisiana and the nation and benefiting humanity as a whole.

The mission of the IfM is:

- To research and develop novel micro and nanosystems for biomedical, biological, environmental, chemical, information technology, and other applications
- To generate and harness commercially viable intellectual property
- To partner with industry, government, and academia in economic development

- To transfer new technology and provide technical training to industry and government
- To develop curricula and educate students in micro/nano scale technologies and systems

The IfM offers a wide range of microtechnology capabilities for the realization of micro electro mechanical systems (MEMS), as well as a complementary array of nanotechnology capabilities for MEMS and other applications.

**Nanotechnology, Biotechnology, Biomedical Nanotechnology, Environmental Technology, and Information Technology** constitute the five major research and development thrust areas and centers of excellence of the IfM.

Examples of projects include:

BioMEMS efforts aimed at the development of select commercially viable micro and nanosystems for biomedical and biological applications; EnviroMEMS efforts aimed at the development of select commercially viable micro and nanosystems for environmental and chemical applications; Nanotechnology efforts directed at the development of select commercially viable nanotechnologies for BioMEMS, EnviroMEMS, and other applications; Information technology efforts are directly supportive of the State of Louisiana IT Initiative and current efforts include projects for the realization of enabling micro/nanotechnologies for information sensing, storage and processing.



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