

CRAFT & HAWKINS DEPARTMENT OF PETROLEUM ENGINEERING · FALL 2006 · VOLUME 15

The LSU College of Engineering recently recognized one of our favorite and best-known petroleum engineering “family” members with induction into its Hall of Distinction. Adam T. (T

Ted is now President of Bourgoyne Enterprises, Inc. and an active professional engineer. His contributions have also been recognized with multiple awards from SPE, by selection as a Distinguished Engineering Graduate of U.T. Austin, and with the Albert Einstein Gold Medal of Honor from the Russian Academy of Natural Sciences. Probably more important to Ted is that semi-retirement allows him to spend more time enjoying fishing, especially with his grandchildren.

In accepting this award, Ted continued his commitment to LSU by telling his audience about the importance of providing a high quality educational experience for our students. He emphasized preparing students, especially the undergraduates who will go on to make up the majority of our profession, for responsible, productive careers. He also expressed appreciation for his many friends from the Craft and Hawkins Department of Petroleum Engineering: the faculty who were his teachers and later his colleagues, the staff who supported his research and service efforts, and the many enthusiastic and successful students and alumni. For those who want to know more about Ted's reflections on his time at LSU, see what he wrote for the Hall of Distinction program at http://www.eng.lsu.edu/alumni/hod/ENG_HOD06Final.pdf.

Election to the Hall of Distinction is based on distinguished professional achievement, dedicated service to engineering, and outstanding humanitarian activities. Eligibility is not restricted to LSU alumni, but nominees are expected to have some signifi-



President Ted Bourgoyne with other distinguished graduates of the Craft and Hawkins Department of Petroleum Engineering.

cant connection with and interest in LSU. Nominations may be made by anyone. Please consider contacting the College of Engineering to nominate others in the LSU petroleum engineering "family" whose contributions have been important.

-John Rogers Smith

ALUMNI NEWS

Friends and graduates of the department are always interested in hearing about individual petroleum engineers and the progression of their careers. Two of our recent graduates are Scott Rovira and Amanda Monus, now Mr. and Mrs. Scott Rovira. Amanda, a 2001 graduate, and Scott, a 2003 graduate, now reside in Houston, Texas.

For Amanda, petroleum engineering was a natural career choice, as her father was also an LSU PETE from 1979. Immediately after graduation, Amanda joined ExxonMobil as a Subsurface Engineer for U.S. Production (USP) in Houston. For three years, she planned and designed workovers and completions in West, South, and East Texas. This work required considerable field time, but now her time is mostly spent on technical design and planning

from the office. Suddenly, artificial lift became the focus of her job, including ESP, gas lift, rod pumping, and other methods, with a new assignment in the USP Artificial Lift group.

She has taken involvement with the SPE to a higher level, serving on the



Board of the SPE Gulf Coast Section Emerging Leaders Program in 2005-2006, and most recently serving on the committee for the Northside Study Group and the

Career Management Study Group. After five years in the industry, she is now preparing for the PE exam.

Scott will always be remembered by the faculty as a reliable and good-natured student worker at the PERTT Lab facility. This experience had a strong influence on his career choice. He joined Applied Drilling Technology (subsidiary of GlobalSantaFe Corp) as a drilling engineer after graduation, working out of Houston. His duties included risk assessment for turnkey wells, cost estimates, drilling programs, ongoing support, and lots of field time in the Gulf of Mexico and South Louisiana. Most recently, he joined Anadarko this past May as a drilling engineer, working on high temperature high pressure wells and horizontal wells in Louisiana, Mississippi, and Oklahoma.

Both are enjoying the learning experience of the petroleum industry. They both cited the drilling and the well design courses as useful in their everyday work. However, their most important piece of advice was "never offer an 8 second solution to a problem your spouse has been working on all day." This wisdom certainly applies beyond married couples.

-Julius Langlinais

At LSU Petroleum Engineering research efforts have included a two-pronged approach to EOR. The first relies on the concept of altering rock-fluids interactions (including spreading, adhesion and wettability in rock-oil-brine-gas systems) by using cost-effective chemical treatments and the second aims to develop an effective alternative to the currently practiced water-alternating-gas EOR process by making use of the gravity drainage concept in conjunction with horizontal wells. The first concept received funding from Marathon Oil Company (\$219,000) and Louisiana Board of Regents (\$253,000), and was completed in 2004. The know-how and technology developed in this 5-year research project is ready for field implementation. The second project aims to develop the Gas-Assisted Gravity Drainage (GAGD) process and was selected in a national competition.

Our capabilities include a Rock-Fluids Interactions Laboratory where measurement can be made of dynamic contact angles (wettability, adhesion and spreading behavior) in rock-oil-brine systems and gas-oil-brine interfacial tensions at actual reservoir pressures and temperatures using live crude oils. In fact, the optical cell that is currently operational in the RFI labs is capable of addressing the most demanding conditions in the Gulf of Mexico, namely pressures up to 20,000 psi and temperatures up to 400°F. To the best of our knowledge, such a capability does not exist outside of LSU.

In addition to these equipment capabilities, we are using new techniques of measurement developed during our past research efforts. For example, the dual-drop dual-crystal technique for dynamic contact angles, a computerized axisymmetric drop shape analysis technique for

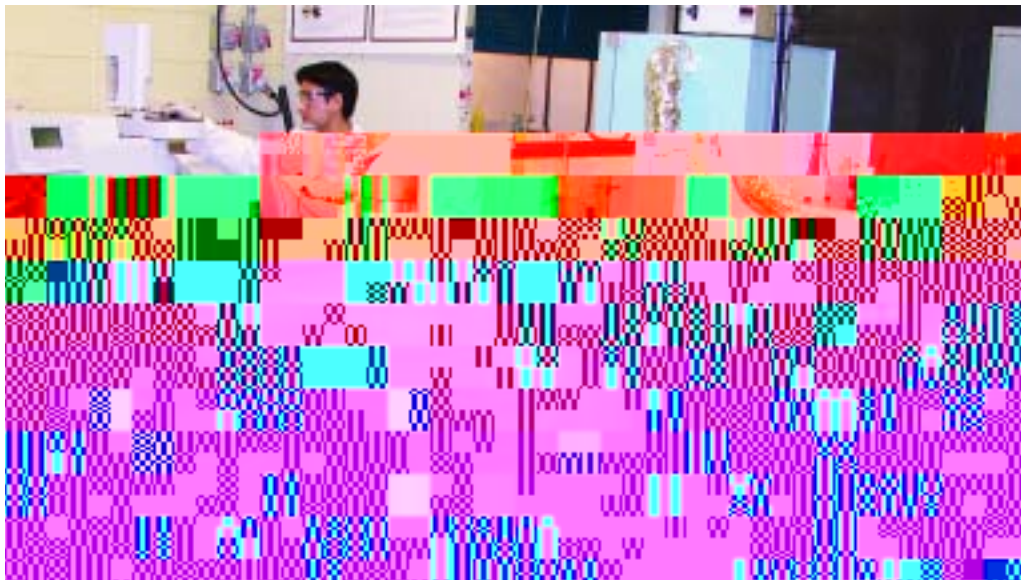


Figure 1: Laboratory setup for dynamic contact angle measurements.

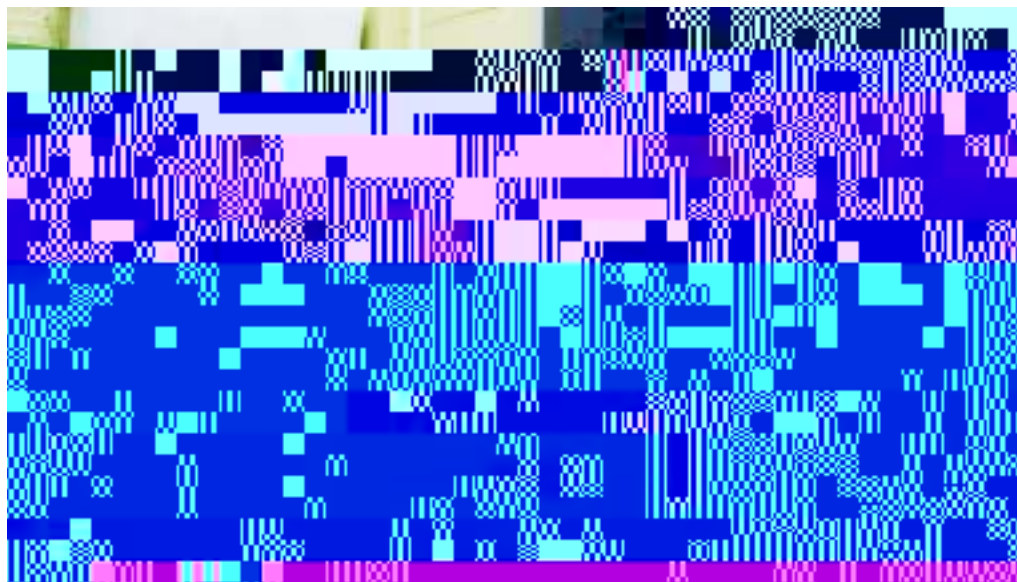


Figure 2: Laboratory setup for interfacial tension measurements.

interfacial tensions, the vanishing interfacial tension technique for gas-oil miscibility determination - all being done at reservoir conditions of pressure, temperature and fluid compositions.

In the EOR labs we also have the capability to measure oil recoveries and relative permeabilities at reservoir conditions using live reservoir fluids. Quite a few others can do this too, but what is unique in LSU Petroleum Engineering EOR labs is the capability to carry out flow through porous media tests in 6-foot long cores - both in horizontal and vertical flooding modes - at pressures up to 5000 psi and temperatures to 250°F. Because of these unique capabilities and our ongoing research efforts, our work has, and still continues to, garner world-wide attention.

-Dan Rao

UNDERGRADUATE HIGHLIGHTS

Michael Carr Donmyer was born to Andi Donmyer, the Assistant to the Chairman of Petroleum Engineering, on January 6, 2006. Michael has since taken to being the newest members of the Petroleum Engineering “family” with great ease. His favorite past times include sitting up, creeping, laughing with his father Todd Donmyer, and trying to convince Fred Thurber that he deserves a scholarship to LSU despite his limited speaking abilities. I’m not sure Fred is “buying” it. Since his thirteenth week of life, he has moved on to day care where he has successfully won the hearts of all his caregivers. Currently, he is vying for a

position in the nursery as Mr. Congeniality. However, none of his baby friends can figure out how to work the voting machines, so the results won’t be in for another couple of years. Hopefully he’ll be able to say a few words by then.f5ll bthen.f5ll bturmetheclue has peum Enud ha.115f1

GRADUATE CORNER

We have a very diversified group of graduate students representing many countries, with different educational backgrounds and professional experiences. They also pursue different goals through graduate education in petroleum engineering at LSU, which offers three options for advanced degree: Master of Science degree with Thesis research, Master of Science degree with no research, also known as “non-Thesis option,” and the Doctor of Philosophy degree. Below, are the profiles of three graduate students - each of them pursuing a different type of graduate degree.

David Brooks (MS non-Thesis option) is a third year graduate student in the Petroleum Engineering Department. His bachelor degree is in mechanical engineering, obtained from the University of Michigan. He worked for 8 years as an engineering consultant before moving to Baton Rouge to work in the petroleum industry and attend LSU. David is a partner in a small, independent, family owned oil and gas company. This company owns and operates its own drilling rigs.

David chose a non-thesis option because it permits him to quickly acquire a broad spectrum of expertise while still working. He has concentrated on drilling and production because these have had an immediate impact on the day-to-day operations at his work. However, logging and reservoir classes have been invaluable for developing skills to evaluate future projects.

David is planning to graduate in December 2006 after which he will return to work full time.

Subash Kalla (MS with Thesis) graduated from National Institute of Technology

in India and joined LSU to study a Masters in Petroleum Engineering. He sees petroleum engineering as applying the principles of sciences and other engineering to develop solutions to “tough and significant” problems. It was his personal interest in both sciences and engineering that made him pursue a master’s degree in petroleum engineering at LSU.

Subash works toward his Master of Science on the research topic “Use of Orthogonal Arrays, Quasi-Monte Carlo Sampling, and Kriging Response Models for Reservoir Simulation with Many Varying Factors”. The work includes improving the field analysis performance by effectively choosing the suites of simulation runs, understanding critical sensitivities, accurate uncertainty and optimization studies, and automating complex reservoir simulation data sets and software so that thousands of runs can be managed efficiently. In his own words, “The MS thesis work helps me to think and work independently, and teaches me the perseverance and patience required for a researcher. Continuing on to receive my PhD and working as a research assistant under Dr. Christopher White, I started working on reconciliation of geocellular models with the geophysical models. Regarding the ongoing research, I am writing a technical paper on ‘Consistent Downscaling of Seismic Inversions to Cornerpoint Flow Models’ with Dr. White as coauthor to Society of Petroleum Engineers (SPE). I submitted another paper on ‘Efficient, Flexible Design and Analysis of Simulation Studies’ last year with Dr. White to SPE.”

STUDENT ORGANIZATIONS

Student petroleum engineering organizations serve as the glue that binds petroleum engineering students to one another in the pursuit of a college degree. The student organizations of the Craft & Hawkins Department of Petroleum Engineering have served its members well throughout the 2005-06 academic year. We would like to thank those of you who have helped us through your generous financial support and/or personal participation in our events; without your help and support, the rich academic environment kindled by student organizations would not be possible.

SPE

The LSU Student Chapter of the Society of Petroleum Engineers (SPE) had to change their planned yearly itinerary due to Hurricanes Katrina and Rita. Nonetheless, Andrea Songy (SPE chapter president), along with Mitzi Orkus (vice-president), Steven Garcia (secretary), Patrick Slattery (treasurer), Erik Hoffpauir (social chair), and Amy Wormsley (engineering council representative), provided the leadership needed to ensure a very successful year. Throughout the year, industry representatives presented numerous topics at SPE student chapter meetings, which helped to educate students by providing them with a glimpse into the professional world of petroleum engineering.

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