# CHRISTOPHER B. ROBERTS

Dean of Engineering and Uthlaut Professor
Samuel Ginn College of Engineering
Auburn University, AL 36849-5127

## EDUCATION

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| 1994 | Ph.D. | Chemical Engineering, University of Notre Dame |
| | | Dissertation: Laser Flash Photolysis Investigations of Reactions and Molecular Structure in Supercritical Fluids |
| 1992 | M.S. | Chemical Engineering, University of Notre Dame |
| 1990 | B.S. | Chemical Engineering, University of Missouri-Columbia |

## EXPERIENCE

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| 2012 – Present | Dean of Engineering, Samuel Ginn College of Engineering, Auburn University |
| 2020 – 2021 | Interim Vice-President for Development and Interim President of the AU Foundation |
| 2004 – Present | Uthlaut Endowed Professor, Department of Chemical Engineering, Auburn University |
| 2003 – 2012 | Department Chair, Department of Chemical Engineering, Auburn University |
| 2000 – 2004 | Uthlaut Associate Professor, Department of Chemical Engineering, Auburn University |
| 1999 – 2000 | Associate Professor, Department of Chemical Engineering, Auburn University |
| 1994 – 1999 | Assistant Professor, Department of Chemical Engineering, Auburn University |

## AREAS OF RESEARCH EXPERTISE & INTERESTS

- Nanomaterials Synthesis, Separation and Processing in Tunable Solvent Systems
- Green Chemistry Approaches to Nanomaterials Synthesis and Processing
- Nanoscale Catalysis and Reaction Engineering in Supercritical Fluid Systems
- Fuel Processing Technology and Fischer-Tropsch Synthesis of Liquid Fuels
- Gas-Expanded Liquids and Supercritical Fluids for Pharmaceutical, Polymer & Materials Processing

## SELECTED HONORS & AWARDS

- University of Notre Dame Graduate School Distinguished Alumnus Award – 2015
- Inducted in Chemical Engineering Academy of Distinguished Alumni, U. Missouri – 2014
- Auburn University Creative Research and Scholarship Award – 2012
- SEC Academic Consortium Faculty Achievement Award – Auburn University – 2012
- Auburn University Excellence in Innovation Award – 2012
- National Organization of Black Chemists and Chemical Engineers (NOBCChE) Presidents Award for Fostering Minority Engagement – 2012
- President's Outstanding Collaborative Units Award, for AU Center for Bioenergy and Bioproducts – 2012
- Auburn Alumni Engineering Council Senior Faculty Research Award – 2011
- Best Scientific Quality Paper Award, Gordon Research Conference – 2005
- Best Poster Award, Catalysis and Reaction Engineering Division, AIChE Annual Meeting – 2004
- Auburn University Camp War Eagle Faculty Honoree – 2004
- Auburn Alumni Engineering Council Senior Faculty Research Award – 2003
- Auburn University College of Engineering Walker Merit Teaching Award – 2002
- George E. and Dorothy Stafford Uthlaut Endowed Professorship – 2000 to present
- Outstanding Faculty Member, Department of Chemical Engineering – 2000
- Lamda Sigma Society Teacher of the Quarter Award, Auburn University – Spring 2000
- Outstanding Faculty Member, Department of Chemical Engineering – 1999
- Auburn University College of Engineering Walker (Birdsong) Superior Teaching Award – 1997
- Auburn Alumni Engineering Council Junior Faculty Research Award – 1997
- Outstanding Dissertation Award, University of Notre Dame – 1994
- NSF Travel Grant for NATO Advanced Study Institute on Supercritical Fluids, Kemer, Turkey – 1993
- Participant NSF-REU in Particulate Systems Engineering at the University of Missouri – 1989

# LEADERSHIP RESPONSIBILITIES AND ACHIEVEMENTS

## RESPONSIBILITIES AS DEAN OF ENGINEERING

- Responsible for the overall vision, direction, scope and mission of the Samuel Ginn College of Engineering, including administration of the academic programs of the college and its research centers and outreach programs; leads the activities of the Samuel Ginn College of Engineering in collaborating across the university campus including engagement with the university-wide Dean's Council, and administratively though the Office of the Provost. Responsible for engaging with the Auburn Alumni Engineering Council and the College of Engineering's Office of Development in maintaining Auburn Engineering's relationship with its nearly 40,000 alumni. The Samuel Ginn College of Engineering consists of 8 academic departments, 13 undergraduate and 24 graduate degree options, 6329 students (5153 undergraduate students, and 1176 graduate students), 400 employees (195 tenure-track faculty, 45 non-tenure track faculty, 160 staff and administrative professionals), with total operating expenses of more than $133 million, total revenues of more than $185 million, and a total of $76 million in annual extramural research awards in FY 21.

## SELECTED ACHIEVEMENTS AS DEAN OF ENGINEERING

- Roberts has crafted a bold vision and an associated set of goals that enhance the Samuel Ginn College of Engineering's unique strengths in order to elevate the college to a heightened level of excellence. These efforts have placed the college on a strong upward trajectory towards the top 20 public engineering programs nationally. Since becoming dean, Roberts has led the college's programs through significant growth of its undergraduate and graduate enrollment with 6,329 total students, and the nation's 25th ranked undergraduate enrollment last year. The college is ranked 30$^{th}$ among public engineering programs nationally, with a clear goal of reaching the top 20. The college has continued to elevate its research programs, and last year the college was ranked 31$^{st}$ in total research expenditures among public engineering programs nationally, and was awarded a record $76M in new extramural research awards in FY21 (up from $18M in FY15). Also, Roberts has significantly escalated the college's fundraising (i.e. development) efforts to include more than $357M in donations to the college during and since the *Because this is Auburn* Campaign, exceeding a goal of $200M. Roberts has also placed a renewed emphasis on the quality of the college's academic programs and student success while building new and stronger graduate programs to address economic development in the state, region and nation.

- Roberts has worked hard with his engineering colleagues to define this bold vision for the Samuel Ginn College of Engineering, to clearly articulate this vision to all of its constituents, to craft a series of long-range goals that underpin this vision, to generate/manage resources to support those goals, and to work very hard with the entire SGCOE team to attract talent and implement projects, processes and procedures to ensure the achievement of our goals. The vision for the Samuel Ginn College of Engineering is to be:

  - The best student-centered engineering experience in America!
  - A leader in research and outreach that improves the quality of life and fosters economic growth.
  - A community of faculty, staff, and students that exemplifies excellence and innovation.

  Working with the various constituents of the college, Roberts established the following goals to support this vision. A select set of examples of activities and achievements associated with each goal are provided below, though this is not an exhaustive list.

### Student Outcomes/Experience

*Goal: Provide transformative engineering education programs with focus on student success and the quality of the "Auburn Experience" for all students where our graduates are highly valued and in demand.*

- In 2012, Roberts developed a resource allocation and development plan to allow the college to adequately support each of its academic programs to facilitate quality and growth. This positioned the college for continual advancement through the new AU responsibility centered budget model process. In order to address the challenges of a significant increase in enrollment, and to therefore

expand faculty resources and student-centered experiences/support services at a level commensurate with the college's goals and expectations, Roberts worked diligently with the AU administration to secure the necessary resources and to employ them strategically. This resulted in a significant positive impact on the student experience/outcomes allowing the college to: Hire additional faculty to offer more sections and reduce class sizes; Provide additional GTAs; Upgrade the hands-on and computer teaching labs; Enrich targeted student experience programs; Add academic advisors, career counselors, tutors, and staff so as to enrich the student experience.

- A particular highlight was the conception, design and construction of the new Brown-Kopel Engineering Student Achievement Center (and its associated student support programs), which opened in the Fall of 2019 after several years of strategic planning, fundraising, and development. This 140,000 $ft^2$ facility aimed at enhancing the success of engineering students was made possible by a $30M gift from John and Rosemary Brown, along with gifts from 50 additional engineering alumni to bring the total support for the project to more than $45M. This new center provides high quality, high touch experiences to AU students in an effort to reach the goal of "providing the best student-centered engineering experience in America." The center includes: Recruiting and Scholarship Office; Academic Advising Center; Engineering Tutoring Center; Career Development and Corporate Relations Office; Maker Spaces and Innovation Laboratory; Flexible Classrooms, along with 31 study rooms and meeting spaces. Since opening, the building has been heavily utilized by Auburn students, faculty and staff for a wide range of activities including hands-on instruction and laboratories, tutoring and academic support, career fairs, student organization meetings, seminar series, K-12 recruiting/outreach, and many other activities. A special point of pride for Roberts is that each of the stanzas of the Auburn Creed are displayed at various locations in the building illustrating the importance of these values in the development of Auburn students.
- A new Engineering Tutoring Center was established and continually expanded to where it now provides academic support for all undergraduate engineering and science courses in each of our engineering curricula. Feedback from students has been very positive and has resulted in clear and measurable improvements in student success and retention/persistence towards degree.
- A new Engineering Career Development and Corporate Relations Office was established to better prepare Auburn students for the industrial/corporate workforce. Specifically, this has involved i) offering content to develop career readiness, ii) hosting numerous career fairs and new career development programs, iii) providing customized career coaching/counseling. In addition, this office works to initiate, develop and deepen employer relationships to create greater opportunities for Auburn students. In particular, full-time career placement, internships, externships, and co-op opportunities have all been enhanced through the establishments of this new office.
- Several new engineering degree programs have been developed and implemented, including a new Masters of Cyber Security Engineering, Masters of Data Science and Engineering, Masters of Engineering Management, an interdisciplinary Masters of Engineering, a new online Bachelors of Computer Science degree, along with multiple new graduate certificates and professional development courses in areas of high national need.
- The college's Engineering Online and Continuing Education programs have been significantly expanded where enrollment and credit hour productivity has been greatly increased. As such, the college has garnered a strong national ranking of #18 among online graduate engineering programs according to U.S. News and World Report while bringing new revenue streams to the college.
- Roberts led the college to full re-accreditation of all undergraduate degree programs in 2017 and is currently ensuring that the college is fully prepared for the next accreditation cycle which will commence in 2022.

*Goal: Accelerate our recruitment of high-caliber undergraduate and graduate students in order to enroll a diverse, high-achieving student body who will impact our nation's engineering workforce and provide solutions to global challenges.*

- Roberts has placed considerable emphasis on student recruitment at all levels in order to attract talent to the Samuel Ginn College of Engineering. He has led the college to significant growth in enrollment from the Fall 2012 total enrollment of 4,910 (4,057 undergraduates and 853 graduate

students) to a total enrollment of 6329 students (5153 undergraduates and 1176 graduate students) in Fall 2021. Moreover, by implementing specific incentives, Roberts has led efforts to explicitly increase Ph.D. enrollment from 345 in 2012 to 623 in 2021, thereby significantly bolstering the college's scholarly research enterprise while attracting talent to support its educational mission. It is also important to note that the quality of new undergraduates entering the Samuel Ginn College of Engineering has also continued to elevate during this period of growth.

- This growth has resulted in the college's undergraduate enrollment being ranked as high as 23rd in the nation according to ASEE's Profiles report, illustrating that the Samuel Ginn College of Engineering is a significant player in preparing and placing talent into the American workforce.
- The college was also ranked 25th in the nation in engineering degrees awarded to African Americans last year, and was ranked 4th in the SEC conference in this category.
- These strategic recruiting efforts have resulted in a 48% increase in the number of traditionally underrepresented students enrolled in the college's undergraduate programs, and a 129% increase in the number of traditionally underrepresented graduate students enrolled since 2012. In addition, the college has achieved a 50% increase in the number of women enrolled in both its undergraduate programs and graduate programs over this same period.
- Significant emphasis has been placed on the growth of the college's scholarship and fellowship programs over the past several years. As such, the college was able to award more than $4M in college scholarships this year to recruit, reward, and retain students. In addition, Roberts also worked to secure generous philanthropic support for graduate fellowships where more than $800K was awarded this year to supplement graduate stipends for nearly 70 talented graduate students through the Woltosz Graduate Fellowship program, the Gavin Graduate Fellowship program, and other endowed fellowships.

**Faculty/Staff Hiring and Development**

*Goal: Recruit, develop, support, recognize, reward and retain exceptional faculty and staff.*

- At the heart of any college is the faculty. Roberts initiated and successfully implemented an ambitious engineering faculty hiring initiative in order to improve student to faculty ratios, increase technical course availability, expand research capacity and breadth of portfolio, and grow the impact of the college's scholarly research endeavor. This initiative has already resulted in the successful recruitment of 99 highly talented tenured/tenure-track faculty and 25 non-tenure-track faculty who hail from some of the most prestigious engineering institutions. Specifically, the number of T/TTF faculty has increased from 135 in 2012 to more than 195 in 2021, with a goal of achieving 200 next year. These new faculty have already significantly advanced our institution through the breadth and depth of their scholarly pursuits and the diversity of their backgrounds and experiences. These advances in faculty recruiting also resulted in a 3-fold increase in the number of women faculty members in the college, along with a 4-fold increase in the number of African American members of the college's faculty.
- To ensure the proper onboarding and mentoring new faculty and staff throughout their careers, including instilling a deep understanding of how to best succeed within Auburn's environment, Roberts and his team established a mentoring committee that has representatives from each of our academic departments. This has become a very active committee within the college, and is focused on developing means to support faculty/staff development at each stage of their career. In addition, a bi-weekly colloquium was created to focus on engagement and support of the engineering community and their professional development.
- The above initiatives have supported our junior faculty such that they are demonstrating great progress in developing their extramural research programs. For example, in 2020, our junior faculty received 5 NSF CAREER Awards, 1 Department of Energy Young Investigator Award, and 3 NIH R35 Awards.
- To further support faculty success, Roberts worked to secure philanthropic support to create a number of new endowed professorships in the college where the number has increased from 16 in 2012 to 45 in 2021, and the number of endowed chairs has increased from 5 in 2012 to 14 in 2021.

- Roberts carefully and deliberately assembled a strong leadership team that includes associate deans, department chairs, institute/center directors, and staff directors of other administrative/business functions who are all committed to advancing our college and its mission. Over the years, I have implemented significant changes in the structure and operation of our college to best align resources and talent to achieve our goals and serve our students while fostering an inclusive work environment where our faculty and staff are welcomed, valued, respected and engaged.

**Scholarly Research**

*Goal: Significantly grow our research enterprise and its ability to meet the global challenges of the 21st century.*

- After a careful assessment of the college's research portfolio and capabilities during his first year as dean, and through engagement of faculty and staff, Roberts developed a research strategy, and associated hirings, to double the college's research endeavor: double extramural funding and double PhDs awarded. This involved aligning efforts against five strategic research thrust areas: i) Advanced Manufacturing and Materials; ii) Cybersecurity and Intelligent Systems; iii) Energy and Environment; iv) Infrastructure and Transportation; v) Biomedical and Health Systems Engineering.
- The college has accomplished substantial growth in its extramural research portfolio, reaching more than $76M in new awards in FY21, a greater than 4-fold increase from $18M in FY2015.
- In recognition of this progress, ASEE ranked the college 31$^{st}$ among public engineering colleges in total research expenditures last year.
- Several new research centers and institutes in areas of national importance have been established that align our research thrusts with federal, state and corporate funding priorities, and world-class scholars have been recruited to lead each of these programs. Examples of new research centers include: the McCrary Institute for Critical Infrastructure Protection, the Auburn University Transportation Research Institute, the National Center for Additive Manufacturing Excellence (NCAME) in partnership with NASA/ASTM, the Interdisciplinary Center for Advanced Manufacturing Systems (ICAMS), the Center for Polymers and Advanced Composite, as well as leadership in Manufacturing USA Institutes, including America Makes, NextFlex, RAPID, and CESMII.
- Roberts led the expansion of the college's presence in Huntsville in order take better advantage of the federal research opportunities where engineering expertise can be brought to bear. Over the past few years, our Huntsville-based programs have grown to include 16 on-site research engineers/staff.
- The "Graduate Engineering Research Showcase" was established to highlight scholarly research via a college-wide paper competition with more than 180 graduate student participants. The "Council of Engineering Graduate Students" was also created along with the position of Associate Dean of Graduate Studies to coordinate our efforts in this key area.

**Diversity and Inclusion**

*Goal: Attract diverse and highly talented faculty, staff and students, and foster an inclusive learning environment where all faculty, staff, and students are welcomed, valued, respected, and engaged.*

- Considerable emphasis has been placed on ensuring that the college's faculty, staff and students are able to fully engage in their research and educational pursuits in an inclusive environment where they are welcomed, valued, respected and engaged. Roberts and his team have been deliberate in these pursuits, which includes the formal creation of the college's Diversity, Equity and Inclusion Committee in 2018 which is made up of faculty, staff and students from across the college. Through this committee, we have been able to actively engage our engineering community via a series of DEI activities such as college listening sessions, climate studies and professional workshops, etc. Moreover, Roberts worked with the chair of the college's Alumni Engineering Council, Mr. Kenneth Kelly, to establish a standing committee of the council to further support our efforts in this important area.
- Roberts worked strategically to expand the student enrollment, financial support, and alumni engagement in the Alabama Power Academic Excellence Program. This is a high impact program

with the mission of strengthening the recruitment and retention of underrepresented students in the Samuel Ginn College of Engineering, and Roberts has worked hard to attract and sustain significant corporate support for the AEP program. He was able to recruit Dr. Cordelia Brown from Purdue University to lead this program, and together they have endeavored to expand the breadth and depth of its impact on Auburn Engineering students. The AEP program recently celebrated its 25th anniversary and also reached a significant fundraising goal for its financial support through engagement of our alumni and corporate sponsors. Based in part on these efforts, the college was ranked 25th in the nation in engineering degrees awarded to African Americans last year, and was ranked 4th in the SEC conference in this category.

- The college's 100+ Women Strong organization, established in 2012, is made up of alumni and friends of the college who embrace our vision and who provide financial resources to recruit, reward and retain female students in the Samuel Ginn College of Engineering. Roberts led the efforts to expand from the initial group of four founding members to its current roster of more than 200 contributing individuals and corporations. The professional development and mentoring programs that have derived from this organization have been instrumental in enabling the college to better support female engineering students at Auburn. Through these efforts, the college has achieved a 50% increase in the number of women enrolled in both its undergraduate programs and graduate programs since 2012.

**Development/Advancement**

*Goal: Strengthen our engagement and partnerships with alumni, industry and other constituents to advance our programs.*

- Upon starting as dean, Roberts set an ambitious fundraising campaign goal of $200M, doubling the goal of our previous campaign. This process provided the opportunity to engage a broad set of the college's constituents in order to align the specifics of our fundraising goals with the aspirations and needs of our college's students, faculty and academic/research programs. Not only was the campaign goal met, under Roberts leadership more than $357M in donations to the college were made during and since the *Because this is Auburn* Campaign. This achievement has strengthened our college in countless ways including scholarships, fellowships, professorships, new infrastructure, new and expanded student support services, and more.
- Roberts has devoted significant time in cultivating relationships with key alumni in order to attract and steward several major gifts to our college, including more than 60 gifts of $1M or more. Example multimillion dollar signature gifts include support for: the Brown-Kopel Engineering Student Achievement Center; expansion of the Ginn Fund for Excellence (which is the largest individual endowment on campus); the Charles Gavin Engineering Research Laboratory and Gavin Fellowship Program; the Woltosz Engineering Research Laboratory and Woltosz Fellowship Program; the Davidson Pavilion addition to Broun Hall; the Charles D. McCrary Institute, the Stone Engineering Leadership Program and Fund for Excellence; the Herkt Excellence and Scholarship Fund; the Thomas Walter Center and MRI Center Fund; the Vulcan Materials High Bay Laboratory; the Alabama Power Academic Excellence Program, among others.

**Facilities and Infrastructure**

*Goal: Provide outstanding facilities and infrastructure for cutting edge research and education.*

- Roberts led the college's efforts to create and improve facilities and infrastructure to better support research and education programs, including the construction and upgrading of research laboratories (including new dedicated spaces for restricted/secured projects), teaching facilities, maker spaces, offices, support functions, meetings rooms, etc. During his tenure as dean, more than $110M in infrastructure projects have been completed, and several new projects are in various stages of development.

**Operational Excellence and Continuous Improvement**

*Goal: Strengthen our culture of continuous improvement in all aspects of the college's operations.*

- Roberts has ensured that all of the college's financial and business functions operate at the highest levels of efficiency, effectiveness, and customer focus, while seeking opportunities for active cost control and more efficient use of resources. Furthermore, establishing and maintaining proper processes for research security and compliance has been an integral part of the strategic expansion of the college's research enterprise. In addition, maintaining effective assessment and evaluation processes for the continuous improvement of each of our academic and student support programs has been a very high priority. Moreover, Roberts has made a strong safety culture a very high priority to ensure safe operations throughout the college, as evidenced by establishing an Engineering Safety Manager position as one of his direct reports.

**College Recognition and Visibility**

*Goal: Elevate awareness and promote the college's programs to improve visibility and reputation.*

- A strong emphasis has been placed on a targeted approach to aggressively market the quality, value and impact of each of the college's programs, and to promote the achievements of our faculty, staff, students and alumni. This has resulted in a steady improvement in the college's visibility and reputation among the more than 400 engineering programs nationally as evidenced, in part, by the following example rankings:
    - 30th ranked among public engineering programs nationally - U.S. News & World Report
    - 18th ranked online graduate engineering program - U.S. News & World Report
    - 25th ranking in engineering degrees awarded to African Americans – ASEE
    - 31st ranked in research expenditures among public engineering programs – ASEE

## RESPONSIBILITIES AS INTERIM VICE-PRESIDENT FOR DEVELOPMENT AND PRESIDENT OF THE AUBURN UNIVERSITY FOUNDATION

- Responsible for providing leadership to the Office of Development to include establishing, implementing, and achieving funding goals and priorities for Auburn University through private gifts and philanthropic efforts. Collaborated and partnered with key internal and external stakeholders to advance Auburn's donor engagement, participation, and overall fundraising. Responsible for motivating and stimulating efficient and effective practices in fundraising including reaching overall organization fundraising goals. Directed the Office of Development through supervision of staff, overseeing the maintenance of records, encouraging professional development, and monitoring/enhancing accomplishments of personnel, including navigating unprecedented operational challenges/changes due to COVID-19. Responsible for all operations of the Office of Development including financial/legal reporting responsibilities to the AU Foundation and the Auburn President. Served as Interim President of the Auburn University Foundation responsible for supporting fundraising, accepting gifts made in support of Auburn University, and managing the investment of all endowments. Served as the Chief Development Officer for the Office of Development; and served as the Interim President for the Auburn University Foundation and the Auburn University Real Estate Foundation Board. Participated in Auburn University Foundation's Board meetings; committee calls/meetings for AUREF; Investment Committee; Development Committee, Audit Committee, Administration and Finance Committee; Directorship Committee

## SELECTED ACHIEVEMENTS AS INTERIM VICE-PRESIDENT FOR DEVELOPMENT AND PRESIDENT OF THE AUBURN UNIVERSITY FOUNDATION

- Led a development team of 160+ people in principal gift, major gift, and annual giving fundraising; development communications and marketing; donor relations; corporate and foundation relations; planned giving; research and prospect management; gift processing and records management; information management services; data analytics; and reporting.
- Managed an overall operating budget of over $28M, and implemented several operational changes to increase efficiency and direct impact on the fundraising enterprise.

- Led the AU development enterprise to successfully raise $125M against an annual goal of $110M in FY21, and established and made significant progress towards the FY22 overall fundraising goal. It should be noted that this was complicated by significant operational disruptions due to COVID-19 and required many immediate procedural changes and adaptations. Moreover, this progress helped the Auburn endowments to recently surpass valuation of more than $1 Billion.

## RESPONSIBILITIES AS DEPARTMENT CHAIR OF CHEMICAL ENGINEERING

- Chief Academic and Financial Officer of the department. Led day-to-day operations of the department, including oversight of space, teaching assignments, hiring and mentoring of new faculty, administration of budgets and grants, setting of strategic goals and directions, and tactical decision making needed to carry out the position's responsibilities.
- Provided leadership in directing, supporting, and advocating for the research, educational and outreach activities within the department.
- Responsible for 18 tenured and tenure-track faculty, 2 teaching faculty, 8 full-time staff members, 13 postdoctoral fellows and visiting scholars, 92 fully funded graduate students (77 Ph.D.), and 550 undergraduate students (both in-major and pre-chemical engineering students).
- Budget oversight of approximately $11M annually, including an operating budget of ~$3.3M, annual research expenditures of ~$7.5M (FY 11), and ~$800K in endowment earnings and gift contributions.
- Responsible for the hiring, promotion, and retention of high-quality faculty and staff.
- Responsible for accreditation and academic quality of each degree program (Bachelors in Chemical Engineering, Master of Science, Master of Chemical Engineering, and Ph.D.)
- Represented the department to the college, university, alumni and external constituencies.

## SELECTED ACHIEVEMENTS AS DEPARTMENT CHAIR

- Developed and implemented a comprehensive strategic plan for the department in 2003, which included focused research and associated hiring targets in the areas of biological engineering, systems engineering, energy systems along with advanced materials and nanotechnology. The approach to achieving these strategic objectives proved successful and each of the stated strategic goals was met or exceeded during role as department chair.
- Increased the department's faculty size to 20 (18 tenure-track) in 2011 from 15 (14 tenure-track) in 2003 by aggressively recruiting 6 new tenure-track faculty members and 1 lecturer from top-tier universities, with the last 3 tenure-track hires being women. All of these faculty were successfully tenured and promoted. These faculty members were successful at garnering national recognition for their research and education programs including two NSF CAREER awards, one PECASE award, four selections to the National Academy of Engineering Frontiers of Engineering Symposia.
- Significantly increased graduate enrollment from 57 in 2002 to 92 in Fall 2011. Particular emphasis was placed on recruiting high quality Ph.D. students from leading institutions such that the Ph.D. enrollment was increased from 30 in 2002 to 77 in Fall 2011. Roberts also strongly emphasized the placement of Ph.D. students in faculty positions, and 9 graduates were appointed to faculty positions at top institutions (e.g. Clemson, Kentucky, Texas A&M, Iowa State) during Roberts tenure as chair.
- Enhanced the undergraduate enrollment in chemical engineering from ~240 in 2003 to ~550 in Fall 2011, representing a more than two-fold increase in the undergraduate student body. Particular emphasis was placed on promoting undergraduate student achievement that led to numerous national awards and recognitions of chemical engineering students.
- More than tripled the department's annual extramural research awards from ~$1.9M in 2003 to ~$7.5M in 2011.
- Co-led the development of a $3M+ NSF Integrative Graduate Education Research Traineeship (IGERT) program. The IGERT program is National Science Foundation's flagship interdisciplinary training program for educating U.S. Ph.D. scientists and engineers. This was the first-ever IGERT

grant awarded to Auburn University and supported more than 30 Ph.D. students in five colleges across campus in the emerging area of integrated biorefineries.

- *Chemical and Engineering News* ranked the Auburn University Department of Chemical Engineering at 25$^{th}$ in the country in research expenditures in their October 2010 issue, and 19$^{th}$ in their October 2009 issue.
- Improved the department's *U.S. News & World Report* Graduate Program Ranking by 20 places. *US News & World Report* ranked the Auburn University Department of Chemical Engineering #49 in 2011 among all institutions (and #30 among public institutions). This was up from a ranking of #69 in 2002.
- Managed the planning and coordination of the complete renovation of Ross Hall (~ 40,000 ft$^2$). This represented a ~$14M renovation project with ~$5M being raised from private development funds.
- Significantly increased the development portfolio of the department by working closely with the Dean of Engineering and the College of Engineering Development Office. This included attracting six new fully endowed professorships (more than $2M) and two new fully endowed chairs (more than $4M) to the department. Annual giving to the department more than doubled during Roberts' tenure as chair.
- Successfully led the department through two national accreditation processes in 2004 and 2010 and the department was accredited by the Accreditation Board for Engineering and Technology (ABET) for the maximum accreditation period of six years each time with only strengths noted and no shortcomings.

# SCHOLARSHIP AND RESEARCH ACTIVITIES

## PATENTS

- Roberts, C.B.; Griffith, A.T., "Process for Recovering Polymers from Commingled Materials", Patent issued, No. 5994417, 1999. **Note:** This AU-owned patent has been successfully licensed to *Modular Carpet Recycling* and a new production facility based on the technology was constructed and began production in Summer 2010 to produce Renewlon®, a high purity renewed nylon, from waste carpet.
- Roberts, C.B.; McLeod, M.C.; Anand, M., "Selection and Deposition of Nanoparticles Using $CO_2$-Expanded Liquids", Patent issued, No. US 7,384,879 B2, 2008.
- Roberts, C.B.; Saunders, S.R. "Method and Apparatus for Physical Separation of Different Sized Nanostructures", Patent issued, No. US 8,215,489 B1, 2012.
- Roberts, C.B.; McLeod, M.C.; Anand, M., "Selection of Nanoparticles Using $CO_2$-Expanded Liquids", Patent issued, No. US 8,377,831 B2, 2013.

## PUBLICATIONS

### *Journal Papers, Book Chapters, and Refereed Proceedings*

1. Roe, D.P.; Xu, R.; Roberts, C.B.;" Influence of a Carbon Nanotube Support and Supercritical Fluid Reaction Medium on Fe-catalyzed Fischer-Tropsch Synthesis," Applied Catalysis A, 543, 141, 2017.
2. Zhong, J.; Chinn, J.; Roberts, C.B.; Ashurst, W.R.; "Vapor-Phase Deposited Chlorosilane-Based Self-Assembled Monolayers on Various Substrates for Thermal Stability Analysis," Industrial & Engineering Chemistry Research, 56 (18), 5239, 2017.
3. Xu, R.; Vengsarkar, P.S.; Roe, D.; Roberts, C.B.; "Fischer-Tropsch Synthesis of Supported Nano-Iron Catalysts Synthesized by a Gas-Expanded Liquid Deposition Technique," Energy & Fuels, 31(4), 4343, 2017.
4. Vengsarkar, P.S.; Xu, R.; Roberts, C.B.; "Deposition of Iron Oxide Nanoparticles onto an Oxidic Support Using a Novel Gas-Expanded Liquid Process to Produce Functional Fischer-Tropsch Synthesis Catalysts," Ind. & Eng. Chemistry Research, 54(47), 11814-11824, 2015.
5. Chaturvedi, A.; Duggan, J.N.; Roberts, C.B.; Suzuki, T.; "Magnetic Properties of Co3O4 Nanoparticles Fabricated by Chemical Synthesis," IEEE Transactions on Magnetics, 51(11), 2300904, 2015.
6. Vengsarkar, P.S.; Xu, R.; Roberts, C.B.; "Scalable fractionation of iron oxide nanoparticles using a CO2 gas-expanded liquid system," Journal of Nanoparticle Research, 17(10), 387, 2015.
7. Stewart, C.; Roberts, C.B.; "Investigation of Supercritical Isooctane as a Reaction Medium in the Conversion of Methanol to Hydrocarbons over H-ZSM-5," Industrial & Engineering Chemistry Research, 54(32), 7811-7821, 2015.
8. Xu R., Vengsarkar P., Roberts C.B., "Fischer-Tropsch Synthesis over Supported Nano-Iron Catalysts Synthesized By Gas-Expanded Liquid Deposition Technique," Proceeding paper for 24th North American Catalysis Society Meeting, 2015
9. Xu, R.; Zhang, S.; Stewart, C.; Durham, E.; Eden, M.R.; Roberts, C.B.; "Effect of Reaction Conditions on Supercritical Hexanes Mediated Higher Alcohol Synthesis over a Cu-Co-Zn Catalyst," *American Institute of Chemical Engineers* (*AIChE) Journal*, 60(5), 1786-1796, 2014.
10. Durham, E.; Stewart, C.; Roe, D.; Xu, R.; Zhang, S.; Roberts, C.B.; "Supercritical Fischer-Tropsch Synthesis: Heavy Aldehyde Production and the Role of Process Conditions." Industrial & Engineering Chemistry Research, (53): 9695-9702, 2014.

11. Duggan, J.N.; Roberts, C.B..; "Clustering and Solvation of Cobalt Nanostructures in Dimethyl Sulfoxide," Industrial and Engineering Chemistry Research, 53(41), 15889-15895, 2014.
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## CONFERENCE PRESENTATIONS, INVITED SEMINARS AND LECTURES

1. Xu, R.; Vengsarkar, P.S.; Roe, D.; Roberts, C.B.; "Catalytic Performance of Supported Nano-Iron Catalysts Synthesized by a Gas-Expanded Liquid Deposition Technique in Fischer-Tropsch Synthesis," American Institute of Chemical Engineers, Annual Meeting, San Francisco, November 13-18, 2016.

2. Roe, D.; Xu, R.; Roberts, C.B.; "Effect of Carbon Support on Supercritical Fluid Mediated Fischer-Tropsch Synthesis with an Iron-Based Nanoscale Catalyst," American Institute of Chemical Engineers, Annual Meeting, San Francisco, November 13-18, 2016.

3. Roe, D.; Roberts, C.B.; "Supercritical Fluid Mediated Fischer-Tropsch Synthesis with an Iron-Based Nanoscale Catalyst," 3rd Workshop on ProBioRefine, December 7-8, 2016.

4. Vensarkar, P.S.; Xu, R.; Roberts, C.B.; "Application-scale size-selective fractionation of iron oxide nanoparticles using $CO_2$-expanded liquids," American Chemical Society National Meeting, COLL 77, March, 2015.

5. Davis S.E.; Herring R.H.; Roberts C.B.; Eden M.R.; "Process Systems Engineering Approaches to Multi-Scale Chemical Product Design", Invited Keynote Lecture, Process Systems Engineering (PSE) 2015 & 25th European Symposium on Computer Aided Process Engineering (ESCAPE-25), Copenhagen, Denmark, 2015. ***(Invited Lecture)***

6. Stewart, C.; Roberts, C.B.; "Effect of a Supercritical Isooctane Reaction Medium on Catalytic Performance in the Methanol-to-Hydrocarbons (MTH) Reaction." Sun Grant Regional Conference. Auburn University, AL., February, 2015.

7. Roe, D.; Roberts, C.B.; "Production via Fischer-Tropsch Synthesis with a Nanoscale Catalyst and Supercritical Reaction Medium," Sun Grant Regional Conference. Auburn University, AL., February, 2015.
8. Xu, R.; Vensarkar, P.S.; Roberts, C.B.; "Fischer-Tropsch Synthesis over Supported Nano-Iron Catalysts Synthesized By Gas-Expanded Liquid Deposition Technique," 24th North American Catalysis Society Meeting, June 17, 2015.
9. Roe, D.; Roberts, C.B.; "Effects of a Supercritical Hexane Media on Fischer-Tropsch Reaction Performance with an Iron-Based Nanoscale Catalyst," American Institute of Chemical Engineers, Annual Meeting, Salt Lake City, UT, November 8-13, 2015.
10. Rui, X.; Vengsarkar, P.S.; Roberts, C.B.; "Deposition of Iron Oxide Nanoparticles Onto an Oxidic Support Using a Novel Gas-Expanded Liquid Process and Its Application in Fischer-Tropsch Synthesis," American Institute of Chemical Engineers, Annual Meeting, Salt Lake City, UT, November 8-13, 2015.
11. Stewart, C.; Roberts, C.B.; "Effect of a Supercritical Isooctane Reaction Medium on Catalytic Performance in the Methanol-to-Hydrocarbons (MTH) Reaction." Sun Grant Regional Conference. Auburn University, AL., February, 2015.
12. Roe, D.; Roberts, C.B.; "Production via Fischer-Tropsch Synthesis with a Nanoscale Catalyst and Supercritical Reaction Medium," Integrated Biomass Supply Systems (IBSS) Regional Conference. August, 2015.
13. Roberts, C.B.; "Advances in Fischer-Tropsch Synthesis," Integrated Biomass Supply Systems (IBSS) Regional Conference. August, 2015.
14. Roe, D.; Roberts, C.B.; "Fuel Production via Fischer-Tropsch Synthesis with a Nanoscale Catalyst and Supercritical Reaction Medium," Sun Grant Regional Conference. Auburn University, AL., February, 2015.
15. Chaturvedi, A.; Suzuki, T.; Duggan, J.N.; Roberts, C.B.; "Magnetic Properties of $Co_3O_4$ Nanoparticles Fabricated by Chemical Synthesis," IEEE International Magnetics Conference, Beijing, China, May 11-15, 2015.
16. Eden M.R., Roberts C.B, Taylor S.E.: "Fuels and Chemicals from Lignocellulosic Biomass via Thermochemical Conversion and Gas-To-Liquids (GTL) Technologies", Invited Lecture, Korea Advanced Institute of Science and Technology (KAIST) ProBioRefine Workshop, Daejeon, South Korea., 2014. ***(Invited Lecture)***
17. Xu, R.; Roberts, C.B. "Deposition of iron oxide nanoparticles onto an oxidic support using a gas-expanded liquid process to generate a Fischer-Tropsch catalyst," Gordon Research Conference on Catalysis, New London, NH, June 22-27, 2014.
18. Eden M.R., Roberts C.B., Taylor S.E., Adhikari S.: "Fuel and Oxygenate Co-Products from Biomass Fractionation and Advanced Catalytic Conversion Processes", USDA-AFRI Sustainable Bioenergy Project Director's Meeting, Arlington, VA, 2014.
19. Roe, D.; Roberts, C.B.; 'Use of a Nanoscale Catalyst and Supercritical Reaction Medium in Fuel Production Via Fischer-Tropsch Synthesis,' AIChE Annual Meeting, Atlanta, GA, November 16-21, 2014.
20. Vengsarkar, P. S., Xu, Rui & Roberts, C. B..; 'Controlled Deposition of Iron Oxide Nanoparticles Using a Novel Gas-Expanded Liquid (GXL) Process to Generate Supported Fischer-Tropsch Catalysts', AIChE Annual Meeting, Atlanta, GA, November 16-21, 2014.
21. Xu, Rui, Vengsarkar, P.S.; Roberts, C.B.; 'Fischer Tropsch Synthesis over Supported Nano-Iron Catalysts Synthesized By Gas-Expanded Liquid Deposition Technique', AIChE Annual Meeting, Atlanta, GA, November 16-21, 2014.
22. Vengsarkar, P. S., Xu, Rui & Roberts, C. B..; 'Controlled Deposition of Iron Oxide Nanoparticles Using a Novel Gas-Expanded Liquid (GXL) Process to Generate Supported Fischer-Tropsch Catalysts', AIChE Annual Meeting, Atlanta, GA, 2014.

23. Zhong, J.; Vengsarkar, P.S.; Roberts, C.B.; Ashurst, W.R; 'Characterization of Gas-Expanded Liquid-Deposited Nanofilms with Size-Controlled Gold and Iron Oxide Nanoparticles', AIChE Annual Meeting, Atlanta, GA, 2014.
24. Stewart, C.; Roberts, C.B.; "Effect of a Supercritical Isooctane Reaction Medium on the Conversion of Methanol to Hydrocarbons over H-ZSM-5." AIChE Annual Meeting. Atlanta, GA. November 18, 2014.
25. Vengsarkar, P. S., Xu, Rui & Roberts, C. B.; 'Preparation of a supported Fischer-Tropsch catalyst using a novel Gas-eXpanded Liquid (GXL) process and its application in the generation of Fischer-Tropsch syncrude', Auburn University Research Week, Auburn, AL, 2014 (Outstanding Oral Presentation in Engineering Award).
26. Stewart, C.; Roberts, C.B.; "Supercritical Fluids as Reaction Media in the Conversion of Methanol to Hydrocarbons." 2014 Graduate Scholars Symposium at Research Week., Auburn University and Dixon Conference Center, Auburn University, AL. June 3, 2014.
27. Roe, D.; Roberts, C.B.; "Use of a Nanoscale Catalyst and Supercritical Reaction Medium in Fuel Production via Fischer-Tropsch Synthesis," Graduate Scholars Symposium at Research Week., Auburn University and Dixon Conference Center, Auburn University, AL. June 3, 2014.
28. Roberts C.B., Duggan J.N. 'Controlling the crystallinity, morphology and magnetic properties of Cobalt nanoparticles using progressive thermal treatment methods.' ACS Spring National Meeting, Dallas, TX, 2014. ***(Invited Presentation in Murphree Symposium)***.
29. Vengsarkar, P.S.; Roberts, C. B.; 'Synthesis of iron oxide nanoparticles coated with novel surfactant bilayers and their application in stabilizing oil-in-water emulsions', ACS Spring National Meeting, Dallas, TX, 2014.
30. Vengsarkar, P.S.; Roberts, C. B.; 'Pickering Emulsion Formation using Iron Oxide Nanoparticles Stabilized with Novel Surfactant Bilayers', Gulf of Mexico: Oil Spill & Ecosystem Conference, Mobile, AL, 2014
31. Stewart, C.; Roberts, C.B.; "Conversion of Methanol to Hydrocarbons over H-ZSM-5 in the Presence of a Supercritical Isooctane Reaction Medium." IBSS Annual Meeting. University of Tennessee, Knoxville, TN., 2014
32. Chaturvedi, A.; Duggan, J.N.; Roberts, C.B.; Suzuki, T.; "Magnetic Properties of Co3O4 Nanoparticles Fabricated by Chemical Synthesis using Molecular Dimethyl Sulfoxide," International Magnetics Conference - IEEE, Oral Presentation, Dresden, Germany, May 2014.
33. Chaturvedi, A.; Duggan, J.N.; Roberts, C.B.; Suzuki, T.; "Coexisting Normal and Inverse Magnetocaloric Effect in Co3O4 Nanoparticles." Paper AG-13, Tuesday, 59th Annual Conference of Magnetism and Magnetic Materials – IEEE Magnetics Society, Honolulu, Hawaii, November 3-7, 2014.
34. Vengsarkar, P.S.; Roberts, C..B.; "Investigating the Effects of Nanoparticle Size on Pickering Emulsion Formation and Stability," Gulf of Mexico: Oil Spill & Ecosystem Conference, New Orleans, LA, 2013.
35. Eden M.R., Roberts C.B., Taylor S.E.: "Production of Transportation Fuels and High Value Co-Products from Biomass via Thermochemical Conversion and Gas-To-Liquids (GTL) Technologies", Invited Lecture, 9th World Congress of Chemical Engineering (WCCE-9), Seoul, South Korea, 2013. ***(Invited Lecture)***
36. Eden M.R., Roberts C.B., Taylor S.E.: "Transportation Fuels and High Value Co-Products from Biomass via Thermochemical Conversion and Gas-To-Liquids (GTL) Technologies", Invited Keynote Lecture, 3rd International Conference on Sustainable Chemical Product and Process Engineering (SCPPE), Dalian, China, 2013. ***(Invited Lecture)***
37. Eden M.R., Roberts C.B., Taylor S.E.: "Liquid Transportation Fuels and High Value Co-Products from Integrated Biomass Fractionation, Gasification and Advanced Catalytic Conversion", Invited Lecture, Inaugural Southeastern Conference (SEC) Academic Symposium, Atlanta, GA, 2013. ***(Invited Lecture)***

38. Duggan, J.N.; Roberts, C.B.; "Synthesis and Characterization of Metallic and Magnetic Nanoparticles in a Multi-Functional Solvent System," 246th American Chemical Society National Meeting, COLL 183, Indianapolis, IN, September, 2013.

39. Stewart, C.E.; Roberts, C.B.; "Effect of Supercritical Hexanes Reaction Medium and $H_2$/CO Molar Ratio on the Synthesis of Higher Alcohols from Syngas over a K-Promoted Cu-Co-Zn Catalyst," American Institute of Chemical Engineers Spring Meeting, San Antonio, TX, May, 2013.

40. Roe, D.; Zhang S.; Xu, R.; Stewart, C.E.; Eden, M.R.; Roberts, C.B.; "Effect of Supercritical Fluid Reaction Medium and Reactor Configuration on Liquid Biofuel Production via Fischer-Tropsch Synthesis with Upgrading Reactions," Integrated Biomass Supply Systems (IBSS) Regional Conference. Raleigh, NC, September 25-27, 2013.

41. Stewart, C.E.; Xu, R.; Roe, D.; Eden, M.R.; Roberts, C.B.; "Effect of Syngas Composition and Supercritical Fluid Reaction Medium on the Production of Higher Alcohols for Bioenergy Applications," Integrated Biomass Supply Systems (IBSS) Regional Conference. Raleigh, NC, September 25-27, 2013.

42. Xu, R.; Stewart, C.E.; Roe, D.; Eden, M.R.; Roberts, C.B.; "Effect of Reaction Temperature on the Supercritical Hexanes Solvent Mediated Mixed Alcohol Synthesis from Syngas," Integrated Biomass Supply Systems (IBSS) Regional Conference. Raleigh, NC, September 25-27, 2013.

43. Eden M.R., Roberts C.B., Taylor S.E., Gallagher T., Tian H.: "Multi- and Inter-disciplinary Project Development – Lessons Learned the Hard Way", Invited Workshop, Auburn University Research Week, 2012. ***(Invited Workshop)***

44. Roe, D.; Zhang, S.; Xu, R.; Steward, C.; Durham, E.; Roberts, C.B. "Production of Middle Distillate Range Liquid Fuels From Syngas Using Fischer-Tropsch Synthesis and Associated Upgrading Technology Under Supercritical Phase Conditions and Multiple Reactor Configurations," AIChE Annual Meeting, Pittsburgh, PA, October 31, 2012.

45. Saunders, S.R.; Roberts, C.B.; Liotta, C.L.; Eckert, C.A.; "Well Defined Nanomaterials Through Tunable and Smart Solvents," AIChE Annual Meeting, Pittsburgh, PA, October 28, 2012.

46. Stewart, C.; Xu, R.; Zhang, S.; Roe, D.; Roberts, C.B.; "Effect of Supercritical Hexanes Reaction Medium and H2/CO Molar Ratio On the Synthesis of Higher Alcohols From Syngas Over a K-Promoted Cu-Co-Zn Catalyst," AIChE Annual Meeting, Pittsburgh, PA, October 31, 2012.

47. Zhang, S.; Roe, D.; Xu, R.; Roberts, C.B.; "Advancement in Iron-Based Low Temperature Fischer-Tropsch Synthesis with Integrated Product Upgrading Via Utilization of Supercritical Fluid Reaction Media," AIChE Annual Meeting, Pittsburgh, PA, October 29, 2012.

48. Rui, X.; Stewart, C.; Roe, D.; Roberts, C.B.; "Effect of Supercritical Solvents On the Synthesis of Higher Alcohols Over a Cu-Co Based Catalyst," AIChE Annual Meeting, Pittsburgh, PA, October 30, 2012.

49. Duggan, J.N.; Vengsarkar, P.S.; Roberts, C.B.; "Exploring the Dispersibility of Gold Nanoparticles in DMSO Using Gas-Expanded Liquid Systems," AIChE Annual Meeting, Pittsburgh, PA, October 30, 2012.

50. Vengsarkar, P.S.; Duggan, J.N.; Roberts, C.B.; "Manipulating Size-Selective Dispersability of Gold Nanoparticles in Gas Expanded Liquid Systems Using Ligand/Solvent Steric Effects," AIChE Annual Meeting, Pittsburgh, PA, October 29, 2012.

51. Vengsarkar, P.S.; Duggan, J.N.; Roberts, C.B.; "Tunable Steric Stabilization Effects On Iron Oxide Nanoparticle Dispersability in Gas Expanded Liquid Systems," AIChE Annual Meeting, Pittsburgh, PA, October 30, 2012.

52. Duggan, J.N.; Vengsarkar, P.S.; Roberts, C.B.; "Tunable Assembly of Metallic and Magnetic Nanoparticle Clusters in DMSO Solvent Systems," AIChE Annual Meeting, Pittsburgh, PA, November 1, 2012.

53. Zhong, J.; Roberts, C.B.; Ashurst, W.R.; "Gold Nanoparticle Films with Varying Surface Roughness Obtained by A Gas-Expanded Liquid Deposition Process," AIChE Annual Meeting, Pittsburgh, PA, October 29, 2012.

54. Tucci, L.E.; Chinnawar, R.B.; LaChance, M.J.; Roberts, C.B.; Duke, S.R.; "PMMA+Budesonide Particles Produced with the Supercritical Antisolvent Precipitation Process," AIChE Annual Meeting, Pittsburgh, PA, October 29, 2012.

55. Durham E., Zhang S., Xu R., Eden M.R., Roberts C.B.; "Novel Adiabatic Reactor Design for Supercritical Fischer-Tropsch Synthesis", 22nd European Symposium on Computer Aided Process Engineering (ESCAPE-22), London, UK, June 17-20, 2012.

56. Herring R.H.; Namikis R.; Chemmangattuvalappil N.G.; Roberts C.B.; Eden M.R.; "Incorporating Topographical Characteristics in Molecular Signature Descriptors", 22nd European Symposium on Computer Aided Process Engineering (ESCAPE-22), London, UK, June 17-20, 2012.

57. Hada S.; Chemmangattuvalappil N.G.; Roberts C.B.; Eden M.R.; "Product and Mixture Design in Latent Variable Space by Chemometric Techniques", 22nd European Symposium on Computer Aided Process Engineering (ESCAPE-22), London, UK, June 17-20, 2012.

58. Hada S., Chemmangattuvalappil N.G., Roberts C.B., Eden M.R.: "Optimization of Product Formulation through Multivariate Statistical Analysis", 11th International Symposium on Process Systems Engineering (PSE-2012), Singapore, Singapore, 2012.

59. Chemmangattuvalappil N.G., Roberts C.B., Eden M.R.: "Signature Descriptors for Process and Molecular Design in Reactive Systems", 11th International Symposium on Process Systems Engineering (PSE-2012), Singapore, Singapore, 2012.

60. Herring R.H., Namikis R., Chemmangattuvalappil N.G., Roberts C.B., Eden M.R.: "Molecular Design using Three-Dimensional Signature Descriptors", 11th International Symposium on Process Systems Engineering (PSE-2012), Singapore, Singapore, 2012.

61. Vengsarkar, P.S.; Boice, J.N.; Roberts, C.B.; "Tunable Steric Stabliziation Effects on Size-Selective Nanoparticle Dispersability in Gas Expanded Liquid Systems," ISSF 2012: 10th International Symposium on Supercritical Fluids, San Francisco, May 13-16, 2012.

62. Boice, J.N.; Vengsarkar, P.S.; Roberts, C.B.; "Nanoparticle Dispersibility in a DMSO/$CO_2$-Gas Expanded Liquid Systems," ISSF 2012: 10th International Symposium on Supercritical Fluids, San Francisco, May 13-16, 2012.

63. Zhang, S.; Xu, R.; Durham, E.; Roberts, C.B.; "Advancement of Fischer-Tropsch Synthesis with Integrated Product Upgrading via Utilization of Supercritical Fluid Reaction Media," ISSF 2012: 10th International Symposium on Supercritical Fluids, San Francisco, May 13-16, 2012.

64. Zhong, J.; Hurst, K.M.; Ashurst, W.R.; Roberts, C.B., "Characterization of Gold Nanoparticle Films Deposited onto Substrates of Varying Surface Energy by Gas-Expanded Liquid Process," ISSF 2012: 10th International Symposium on Supercritical Fluids, San Francisco, May 13-16, 2012.

65. Xu, R.; Zhang, S.; Roberts, C.B.; "Investigation of Supercritical Fluids as Reaction Media for Higher Alcohol Synthesis over a Cu-Co-Zn Catalyst," ISSF 2012: 10th International Symposium on Supercritical Fluids, San Francisco, May 13-16, 2012.

66. Boice, J.; Vengsarkar, P.; Roberts, C.B.; "Nanoparticle Dispersibility in a DMSO/CO2-Gas Expanded Liquid System," ISSF 2012: 10th International Symposium on Supercritical Fluids, San Francisco, May 13-16, 2012.

67. Zhang, S.; Xu, R.; Durham, E.; Roberts, C.B.; "Middle Distillates Production Via Fischer Tropsch Synthesis with Product Upgrading Under Supercritical Phase Conditions," AICHE Spring Meeting, Houston, April 1-5, 2012. (accepted for presentation)

68. Xu, R.; Zhang, S.; Roberts, C.B.; "Utilization of Supercritical Fluids As Reaction Media for the Synthesis of Higher Alcohols From Syngas," AICHE Spring Meeting, Houston, April 1-5, 2012. (accepted for presentation)

69. Roberts, C.B. "A Gas-Expanded Liquid Nanoparticle Deposition Technique for Reducing Adhesion of Silicon Microstructures and the Size-Selective Separation of Nanomaterials", Supergreen 2011 – 7th International Conference on Supercritical Fluids, Beijing, China, August 26-29, 2011. ***(Invited Lecture)***

70. Eden, M.R.; Roberts, C.B.; Taylor, S.E.; "Production of Transportation Fuels and High Value Co-Products through Integrated Biomass Fractionation, Gasification and Advanced Catalytic Conversion", 2nd International Congress on Sustainability Science and Engineering, Tucson, AZ, 2011. ***(Invited Lecture)***

71. Roberts, C.B. "A Gas-Expanded Liquid Nanoparticle Deposition Technique for Reducing Adhesion of Silicon Microstructures and the Size-Selective Separation of Nanomaterials", Telluride Summer Research Workshop on Solution Based Synthesis of Nanomaterials and their Organization for Hybrid Device Structures, Telluride, CO, July 18-22, 2011. ***(Invited Lecture)***

72. Roberts, C.B.; Saunders, S.R.; Hurst, K.M. "Using the Tunable Properties of Gas-Expanded Liquids to Improve Nanoparticle Deposition, Array Formation, and Size-Selective Separation Processes", Symposium on Synthesis and Architecture of Nanomaterials at the ICMAT 2011 International Conference on Materials for Advancing Technologies, Singapore, June 26-July 1, 2011. ***(Invited Lecture)***

73. Roberts, C.B.; "Improving nanoparticle deposition and separation processes using the tunable properties of gas expanded liquids," Mississippi State University, November 29, 2011. ***(Invited Seminar)***

74. Durham, E.; Eden, M.R.; Roberts, C.B. "Supercritical Adiabatic Reactor for Fischer-Tropsch Synthesis", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

75. Durham, E.; Zhang, S.; Xu, R.; Roberts, C.B. "Aldehydes and Ketones from Fischer-Tropsch Synthesis", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

76. Saunders, S.R.; Roberts, C.B. "Modeling the Dispersability of Polydisperse Nanoparticles in Gas-expanded Liquids", AIChE Annual Meeting, Minneapolis, MN, October 17, 2011

77. Vengsarkar, P.S.; Saunders, S.; Roberts, C.B. "Influence of Solvent Steric Effects on $CO_2$-induced Nanoparticle Precipitation", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

78. Mahmud, M.A.; Chinn, J.; Roberts, C.B.; Ashurst, W.R.; Jones, W. "Characterization of the Durability of Super-hydrophobic Surfaces Produced by Nanoparticle Vapor Deposition", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

79. Roberts, C.B. "Best Practices Panel Discussion by Department Chairs", in the Department Heads Forum, AIChE Annual Meeting, Minneapolis, MN, October 19, 2011 (Other panelists include M. Burns – Michigan, D. Kalika – Kentucky, R. Rousseau – Georgia Tech, L. Weatherley - Kansas)

80. Hurst, K.; Zhong, J.; Roberts, C.B.; Ashurst, W.R.: "Characterization of Gas-expanded Liquid-deposited Gold Nanoparticle Films on Substrates of Varying Surface Energy", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

81. Zhang, S.; Xu, R.; Roberts, C.B.: "Production of Middle Distillate Range Transportation Fuels Via Fischer-Tropsch Synthesis With Integrated Upgrading Under Supercritical Phase Conditions", AIChE Annual Meeting, Minneapolis, MN, October 19, 2011

82. Xu, R.; Zhang, S.; Durham, E.; Roberts, C.B. "Synthesis of Higher Alcohols from Syngas Over a K Promoted Cu-Co-Zn Catalyst in Supercritical Hexanes", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

83. Boice, J.N.; Liu, J.; Roberts, C.B. "A Simple and Sustainable Method to Synthesize Magnetic Nanoparticles Using a Functional Solvent", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

84. Chinnawar, R.B.; Roberts, C.B.; Duke, S.R. "Laser-induced Fluorescence Studies of Solute Concentration in the Supercritical Antisolvent Precipitation Process", AIChE Annual Meeting, Minneapolis, MN, October 18, 2011

85. Rogers, H.; Liu, J.; Saunders, S.R.; Roberts, C.B.; "The Effects of Morphology on the Catalytic Activities of Platinum Nanoparticles Synthesized using Green Chemistry Methods," 2011 AIChE Regional Conference, Georgia Institute of Technology, April 2011. (Third Place Podium Presentation Award)

86. Zhang, S.; Xu, R.; Durham, E.; Roberts, C.B.; "Production of Middle Distillate Range Transportation Fuels from Synthesis Gas using Fischer-Tropsch Synthesis Technology on Iron-based Catalyst under Supercritical Phase Conditions", American Chemical Society National Meeting, Denver, CO. August 2011.

87. Boice, J.N.; Liu, J.C.; Roberts, C.B.; "Green Synthesis of Magnetic Nanoparticles using a "Functional Solvent" for use as Contrasting Agents in MRI," 15th Annual Green Chemistry and Engineering Conference – American Chemical Society, Washington DC, June 2011

88. Yuan, W.; Vaughan, G.C.; Roberts, C.B.; Eden. M.R.; "Modeling and Optimization of Supercritical Phase Fischer-Tropsch Synthesis", 21st European Symposium on Computer Aided Process Engineering (ESCAPE-21), Chalkidiki, Greece, 2011.

89. Bacik, D.B.; Yuan, W.; Roberts, C.B.; Eden M.R.; "Systems Analysis of Benign Hydrogen Peroxide Synthesis in Supercritical $CO_2$", 21st European Symposium on Computer Aided Process Engineering (ESCAPE-21), Chalkidiki, Greece, 2011.

90. Roberts, C.B.; "Improving Nanoparticle Deposition and Separation Processes using the Tunable Properties of Gas Expanded Liquids," University of Alabama, March 10, 2011. ***(Invited Seminar)***

91. Roberts, C.B.; "Improving Nanoparticle Deposition and Separation Processes using the Tunable Properties of Gas Expanded Liquids," Alabama State University, April 19, 2011. ***(Invited Seminar)***

92. Zhang, S.; Xu, R.; Durham, E.; Roberts, C.B.; "Production of Middle Distillate Range Transportation Fuels From Synthesis Gas Using Fischer Tropsch Synthesis Technology Under Supercritical Phase Conditions," paper 56d, American Institute of Chemical Engineers Spring National Meeting, Chicago, IL, March 15, 2011.

93. Xu, R.; Zhang, S.; Durham, E.; Roberts, C.B.; "Synthesis of Higher Alcohols From Syngas Over a K Promoted Cu-Co-Zn Catalyst In Supercritical n-Hexane," paper 100c, American Institute of Chemical Engineers Spring National Meeting, Chicago, IL, March 16, 2011.

94. Durham, E.; Eden, M.R.; Roberts, C.B.; "Reactor Design for Supercritical Fischer Tropsch," paper 42a, American Institute of Chemical Engineers Spring National Meeting, Chicago, IL, March 15, 2011.

95. Ansari, N.; Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "A Systematic Investigation of the Critical Tribological Properties of a Gold Nanoparticle Coating Used for Texturing Micro-electromechanical Systems Surfaces (poster)," 24th IEEE International Conference on Micro-electromechanical Systems, Cancun, Mexico, January 23-27, 2011.

96. Eden M.R., Roberts C.B., Taylor S.E., Adhikari S.: "Fuel and Oxygenate Co-Products from Biomass Fractionation and Advanced Catalytic Conversion Processes", National Institute of Food & Agriculture, Sustainable Bioenergy Project Director's Meeting, Washington, DC, 2011.

97. Eden, M.R.; Roberts, C.B.; Adhikari, S.; Taylor, S.E.; "Co-Production of High Value Oxygenates and Olefins through Integrated Biomass Fractionation, Gasification and Advanced Catalytic Conversion", Frontiers in Biorefining: Biobased Products from Renewable Carbon, St. Simons Island, GA. ***(Invited Lecture)***.

98. Seehra, M.S.; Rall, J.; Liu, J.; Roberts, C.B. "From Bulk to Nanoscale: Investigations of the Size-dependent changes in the Magnetism of Pd", Magnetism and Magnetic Materials Conference, Atlanta, GA, 2010.

99. Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Control Nanoparticle Deposition and Separation Processes," Department of Polymer and Fiber Engineering, Auburn University, April 13, 2010. ***(Invited Seminar)***

100. Durham, E.; Xu, R.; Zhang, S.; Roberts, C.B.; "Supercritical Fischer Tropsch Synthesis," 24th Annual Technical Meeting of the Consortium for Fossil Fuel Science, Pittsburgh, PA, August, 2010.
101. Saunders, S.R.; Roberts, C.B.; "Precipitation and Fractionation of Nanoparticles using Gas-expanded Mixtures as Tunable Solvents." 240th American Chemical Society National Meeting, August 22-26, Boston, MA, 2010.
102. Hurst, K.M.; Ansari, N.; Roberts, C.B.; Ashurst, W.R.; "Immobilized Nanoparticle Coatings Deposited via Gas-expanded Liquids for Improved Microtribology Control." 240th American Chemical Society National Meeting, August 22-26, Boston, MA, 2010.
103. Bacik, D.; Zhang, M.; Zhao, D.; Roberts, C.B.; "Enhanced Hydrodechlorination of Trichloroethylene in Aqueous Solution by Supported Polysugar-stabilized Pd Nano-particles." 240th American Chemical Society National Meeting, August 22-26, Boston, MA, 2010.
104. Ansari, N.; Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "A Systematic Study of the Effect of Roughness of Contacting Surfaces on Stiction Between Them." 2010 American Institute of Chemical Engineers Annual Meeting, paper 279b, November 7-12, Salt Lake City, UT, 2010.
105. Ansari, N.; Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Tribological Impact of Surface Texturing using Gold Nanoparticles on MEMS." 2010 American Institute of Chemical Engineers Annual Meeting, paper 348g, November 7-12, Salt Lake City, UT, 2010.
106. Ansari, N.; Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "A Simple Method to Characterize MEMS Surfaces Textured with Gold Nanoparticles Deposited using a Gas-expanded Liquid Technique." 2010 American Institute of Chemical Engineers Annual Meeting, paper 741e, November 7-12, Salt Lake City, UT, 2010.
107. Josephson, W.E.; Mills, D.; Roberts, C.B.; Wilson, B.; Ostertag, T.; "Chemical Engineering TIGERs: Practices at Auburn University." 2010 American Institute of Chemical Engineers Annual Meeting, paper 542d, November 7-12, Salt Lake City, UT, 2010.
108. Zhang, S.; Durham, E.; Xu, R.; Roberts, C.B.; "Production of Middle Distillate Range Transportation Fuels from Synthesis Gas using Fischer-Tropsch Synthesis Technology under Supercritical Phase." 2010 American Institute of Chemical Engineers Annual Meeting, paper 570s, November 7-12, Salt Lake City, UT, 2010.
109. Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Nanoparticle-based Thin Films for Tribology Control in MEMS." 2010 American Institute of Chemical Engineers Annual Meeting, paper 4q, November 7-12, Salt Lake City, UT, 2010.
110. Chinnawar, R.B.; Klinger, A.P.; Roberts, C.B.; Duke, S.R.; "Laser Induced Fluorescence Studies of Concentration Fields in Supercritical Antisolvent Precipitation Spray." 2010 American Institute of Chemical Engineers Annual Meeting, paper 190e, November 7-12, Salt Lake City, UT, 2010.
111. Hurst, K.M.; Ansari, N.; Roberts, C.B.; Ashurst, W.R.; "Nanoparticle-based Surface Modifications for Microtribology Control." 2010 American Institute of Chemical Engineers Annual Meeting, paper 331d, November 7-12, Salt Lake City, UT, 2010.
112. Saunders, S.R.; Roberts, C.B.; "Modeling the Dispersability of Polydisperse Nanoparticles in Gas-expanded Liquids." 2010 American Institute of Chemical Engineers Annual Meeting, paper 433e, November 7-12, Salt Lake City, UT, 2010.
113. Xu, R.; Zhang, S.; Roberts, C.B.; "Synthesis of Higher Alcohols from Syngas over K Promoted Cu-Co-Zn Catalyst in Supercritical n-Hexane." 2010 American Institute of Chemical Engineers Annual Meeting, paper 570r, November 7-12, Salt Lake City, UT, 2010.
114. Saunders, S.R.; Roberts, C.B.; "Tuning the Precipitation and Fractionation of Nanoparticles in Gas-expanded Liquids." 2010 American Institute of Chemical Engineers Annual Meeting, paper 649d, November 7-12, Salt Lake City, UT, 2010.
115. Rogers, H.; Liu, J.; Saunders, S.R.; Roberts, C.B.; "The Effects of Morphology on the Catalytic Activities of Platinum Nanoparticles Synthesized using Green Chemistry Methods," 2010 American

Institute of Chemical Engineers Annual Meeting, paper 649d, November 7-12, Salt Lake City, UT, 2010. (Received SLA Young Scientist Award for Best Poster Nationally)

116. Rogers, H.; Liu, J.; Saunders, S.R.; Roberts, C.B.; "The Effects of Morphology on the Catalytic Activities of Platinum Nanoparticles Synthesized using Green Chemistry Methods," 2010 AIChE Regional Conference, North Carolina State University, April 2010. (Received 1st place poster award)

117. Durham, E.; Zhang, S.; Roberts, C.B.; "Diesel Length Aldehydes From Iron-Based Fischer Tropsch Synthesis," American Institute of Chemical Engineers Spring Meeting: Topical 6 - 10th Topical Conference on Gas Utilization: Coal, Biomass and Natural Gas to Liquids II Section, presentation 33b, San Antonio, TX, March 21-25, 2010.

118. Durham, E.; Roberts, C.B.; "Diesel-length Aldehydes from Supercritical Fischer Tropsch Synthesis on an Iron Catalyst," 239th American Chemical Society National Meeting: FUEL Division, Green Chemistry on Fuels of the Future, presentation 123, San Francisco, March 21-25, 2010.

119. Saunders, S.R.; Anand, M.; You, S.S.; Roberts, C.B.; "Total Interaction Energy Model to Predict Nanoparticle Dispersability in $CO_2$-Expanded Solvents," 20th European Symposium on Computer Aided Process Engineering (ESCAPE-20), Ischia, Italy, June 6-9, 2010.

120. Ansari, N.; Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Surface Texturing Using Gold Nanoparticles to Reduce Adhesion in MEMS", 2010 SEM Annual Conference & Exposition on Experimental and Applied Mechanics, Indianapolis, IN, USA, June 7-10, 2010.

121. Huffman, G.P.; Roberts, C.B.; Eden, M.R.; "Production and Storage of Hydrogen from Coal Using C1 Chemistry." FY11 Advanced Fuels Peer Review, NETL, Morgantown, WV, October 18-22, 2010.

122. Durham, E.; Xu, R.; Zhang, S.; Roberts, C.B.; "Basic Studies of Supercritical Fischer Tropsch Synthesis on an Iron Catalyst for Enhanced Middle Distillate Production," 23rd Annual Technical Meeting of the Consortium for Fossil Fuel Science, Pittsburgh, PA, August, 2009.

123. Zhang, S.; Xu, R.; Durham, E.; Roberts, C.B.; "Scalable Production of Middle Distillate Range Transportation Fuels using a Gas-to-Liquids Approach with Integrated Product Upgrading," 23rd Annual Technical Meeting of the Consortium for Fossil Fuel Science, August, 2009.

124. Liu, J.; Roberts, C.B.; "Implementation of Green Chemistry and Engineering Principles into Nanomaterial Synthesis and Processing," 13th Green Chemistry & Engineering Conference, Maryland, June, 2009.

125. Liu, J.; Pollet, P.; Ruffini, N.; Liotta, C.L.; Eckert, C.A.; Roberts, C.B.; "More Benign Synthesis and Extraction of Palladium Nanoparticles," 13th Green Chemistry & Engineering Conference, Maryland, June, 2009.

126. Roberts, C.B.; "Insights into Engineering a Successful Academic Career," Young Faculty Forum, 2009 Annual American Institute of Chemical Engineers Meeting, Nashville, TN, November 8-13, 2009. ***(Invited Talk)***

127. Chinnawar, R.B.; Obrzut, D.L.; Roberts, C.B.; Duke, S.R.; "Solubility and Concentration Effects on Precipitation in Supercritical Antisolvent Processes," 2009 Annual American Institute of Chemical Engineers Meeting, Nashville, TN, November 8-13, 2009.

128. Liu, J.; Rufinni, N.; Roberts, C.B.; Pollet, P.; Llopis-Mestre, V.; Liotta, C.L.; Eckert, C.A.; "More Benign Synthesis and Extraction of Ligand-Free Palladium Nanoparticles," 2009 Annual American Institute of Chemical Engineers Meeting, Nashville, TN, November 8-13, 2009.

129. Liu, J.; Morgan, J.; Roberts, C.B.; "Seed-mediated Growth of Au Nanorods with Controllable Sizes", 2009 Annual American Institute of Chemical Engineers Meeting, Nashville, TN, November 8-13, 2009.

130. Saunders, S.R.; Roberts, C.B.; "Size Selective Fractionation of Nanoparticles at Significant Scales Using $CO_2$-expended Liquids," 2009 Annual American Institute of Chemical Engineers Meeting, Nashville, TN, November 8-13, 2009.

131. Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Nanoparticle/Self-assembled Monolayer Composite Coatings for MEMS Reliability," 2009 American Institute of Chemical Engineers Annual Meeting, Nashville, TN, November 8-13, 2009.

132. Saunders, S.R.; Roberts, C.B.; "Size Selective Fractionation of Nanoparticles at Application Scales Using $CO_2$ Gas Expended Liquids," 9th International Symposium on Supercritical Fluids, Arcachon, France, May 18-20, 2009.

133. Hurst, K.M.; Ashurst, W.R.; Roberts, C.B.; "A Gas-expanded Liquid Nanoparticle Deposition and Supercritical Drying Process to Reduce Adhesion of Microstructures." 9th International Symposium on Supercritical Fluids, Arcachon, France, May 18-20, 2009.

134. Elbashir N.O.; Bukur D.B.; Roberts C.B.; "Non-Ideality in Reaction Kinetics of Fischer-Tropsch Synthesis for Near-Critical and Supercritical Solvent Media." 9th International Symposium on Supercritical Fluids, Arcachon, France, May 18-20, 2009.

135. Obrzut, D.L.; Duke, S.R.; Roberts, C.B.; "Visualization of Spray and Particle Characteristics of Supercritical Antisolvent Precipitation of PMMA, PVP, and Copolymers." 9th International Symposium on Supercritical Fluids, Arcachon, France, May 18-20, 2009.

136. Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Control Nanoparticle Deposition and Separation Processes," University of Houston, September 17, 2009. ***(Invited Seminar)***

137. Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Control Nanoparticle Deposition and Separation Processes," Rice University, September 18, 2009. ***(Invited Seminar)***

138. Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Control Nanoparticle Deposition and Separation Processes," Virginia Commonwealth University, October 7, 2009. ***(Invited Seminar)***

139. Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Dontrol Nanoparticle Deposition and Separation Processes," West Virginia University, January 30, 2009. ***(Invited Seminar)***

140. Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Control Nanoparticle Deposition and Separation Processes," University of Pittsburgh, March 20, 2009. ***(Invited Seminar)***

141. Roberts, C.B.; "Controlling Nanoparticle Synthesis, Dispersion and Separation Processes using the Tunable Properties of Gas Expanded Liquids for Biomedical and Other Applications," Harrison School of Pharmacy, Auburn University, September 28, 2009. ***(Invited Seminar)***

142. Seehra, M.S.; Rall, J.; Liu, J.; Roberts, C.B.; "Development of Ferromagnetism in Pd Nanoparticles with Reduction in Size," Annual March Meeting of the American Physical Society, Pittsburgh, PA, March 16-20, 2009.

143. He, F.; Liu, J.; Roberts, C.B.; Zhao, D.; "One Step "Green" Synthesis of Pd Nanoparticles of Controlled Size and Their Catalytic Activity for Trichloroethylene Hydro-dechlorination," 237th American Chemical Society National Meeting, Salt Lake City, UT, March 22-26, 2009.

144. Saunders, S.R.; Hurst, K.M.; Ashurst, W.R.; Roberts, C.B.; "Efficient and Scalable Nanoparticle Separation and Deposition Processing Using the Tunable Properties of $CO_2$ Expanded Liquids," 237th American Chemical Society National Meeting, Salt Lake City, UT, March 22-26, 2009. ***(Invited Lecture)***

145. Zhao, D.; Roberts, C.B. "Synthesis and Application of a New Class of Stabilized Nanoscale Iron Particles for Rapid Destruction of Chlorinated Hydrocarbons in Soil and Ground Water;" Nanotechnology and the Environment: Applications and Implications Progress Review Workshop, EPA, October 2008

146. Durham, E.; Roberts, C.B.; "Process Technology for Tunable FT Synthesis Towards Middle Distillate Fuel Fractions, 22nd Annual Meeting of the Consortium for Fossil Fuel Science, August, 2008.

147. Durham, E.; Zhang, S.; Xu, R.; Roberts, C.B.; "Transportation Fuels from Coal + Biomass using a Gas-to-liquids Approach," 22nd Annual Meeting of the Consortium for Fossil Fuel Science, August, 2008.

148. Liu, J.; Roberts, C.B.; "Green" and Size-Controlled Synthesis and Seed-Mediated Growth of Pd Nanoparticles," 12th Green Chemistry & Engineering Conference, Washington, DC, June, 2008.

149. Saunders, S.R.; Roberts, C.B.; "Scale-up of a Nanoparticle Size-Selective Fractionation Process Using $CO_2$-Expanded Liquids," 2008 American Institute of Chemical Engineers Annual Meeting, Philadephia, PA, November 16-21, 2008.

150. Roberts, C. B.; "Building Relationships with Alumni and Fund Raising", Department Chair's Forum, 2008 American Institute of Chemical Engineers Annual Meeting, Philadephia, PA, November 16-21, 2008. ***(Invited Talk)***

151. Zhao, D.; He, F.; Xu, L.; Roberts, C. B.: "In-situ Reductive Transformation of Chlorinated Solvents and Immobilization of Chromium in Soils using Polysaccharide-stabilized Iron Nanoparticles," 2008 American Institute of Chemical Engineers Annual Meeting, Philadephia, PA, November 16-21, 2008.

152. Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Microtribology Control Provided by $CO_2$-expanded Liquid Nanoparticle Deposition," 2008 American Institute of Chemical Engineers Annual Meeting, Philadephia, PA, November 16-21, 2008.

153. Durham, E.; Zhang, S.; Roberts, C.B.; "Supercritical Reactivation of Fischer Tropsch Catalysts," 2008 American Institute of Chemical Engineers Annual Meeting: Catalysis and Reaction Engineering Division, Alternative Energy I Section, presentation 678d, Philadelphia, PA, November16-21, 2008.

154. Liu, J.; Roberts, C.B.; "Green" and Size-Controlled Synthesis of Pd Nanoparticles, 2008 American Institute of Chemical Engineers Annual Meeting, Philadelphia, PA, November 16-21, 2008.

155. Liu, J.; Roberts, C.B.; "Implementation of Green Chemistry and Engineering Principles into Nanomaterial Synthesis and Processing," 2008 American Institute of Chemical Engineers Annual Meeting, Philadelphia, PA, November 16-21, 2008.

156. Kim, G-Y.; Park, Y.; Roberts C. B.; You, S-S.; "Thermodynamic modeling of ligand-capped nanoparticles and gas-expanded liquid systems," 8th International Conference on Separation Science and Technology, Karuizawa, Nagano, Japan, October 2-4, 2008.

157. Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Reduced Microstructure Adhesion Provided by Gas-expanded Liquid Deposited Gold Nanoparticles," ASME/STLE International Joint Tribology Conference, Miami, FL, October 20-22, 2008.

158. Liu, J.; He, F.; Roberts, C.B.; Zhao, D.; "Green" Synthesis of Pd Nanoparticles for Catalytic Hydrodechlorination of Environmentally Deleterious Trichloroethylene,",2008 Alabama Water Resource Conference, Orange Beach, Alabama, September, 2008.

159. Roberts, C.B.; "Metal and Semiconductor Nanoparticle Deposition and Separation using $CO_2$-expanded Liquids," Louisiana State University, February 29, 2008. ***(Invited Seminar)***

160. Saunders, S.R.; Hurst, K.M.; Ashurst, W.R.; Roberts, C.B.; "Using the Tunable Properties of Gas Expanded Liquids to Control Nanoparticle Deposition and Separation Processes," American Chemical Society National Meeting, New Orleans, LA, April 6-10, 2008. ***(Invited Lecture)***

161. Saunders, S.R.; Anand, M.; Roberts, C.B.; "Nanoparticle Size-Selective Fractionation Process Using $CO_2$-Expanded Liquids at Different Processing Scales," Particles 2008: Particle Synthesis, Characterization, and Particle-Based Advanced Materials, Orlando, FL, May 10-13, 2008.

162. Saunders, S.R.; Hurst, K.M.; Ashurst, W.R.; Roberts, C.B.; "Metal and Semiconductor Nanoparticle Deposition and Separation Using $CO_2$-Expanded Liquids," Particles 2008: Particle Synthesis, Characterization, and Particle-Based Advanced Materials, Orlando, FL, May 10-13, 2008. ***(Invited Lecture)***

163. Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Gold Nanoparticle Deposition via Gas-expanded Liquids for Improved Micromachine Reliability," Particles 2008: Particle Synthesis, Characterization, and Particle-Based Advanced Materials, Orlando, FL, May 10-13, 2008.

164. Saunders, S.R.; Anand, M.; Roberts, C.B.; "Scale-Up of a Nanoparticle Size-Selective Fractionation Process Using $CO_2$-Expanded Liquids," 82nd American Chemical Society Colloids & Surface Science Symposium, Raleigh, NC, June 15-18, 2008.

165. Hurst, K.M.; Roberts, C.B.; Ashurst, W.R.; "Colloidal Gold Nanoparticles Deposited via $CO_2$-expanded Liquids for Improved Micromechanism Reliability," 82nd American Chemical Society Colloids & Surface Science Symposium, Raleigh, NC, June 15-18, 2008.

166. Feng He, Christopher B. Roberts, and Dongye Zhao, "Synthesis and Characterization of a New Class of Carboxymethyl Cellulose Stabilized Pd Nanoparticles for Catalytic Hydrodechlorination of Trichloroethylene", 236th American Chemical Society National Meeting, Philadelphia, PA, Tuesday, August 19, 2008.

167. Durham, E.; Bordawekar, M.; Roberts, C.B.; "Effects of super-critical Fluid Extraction on the Activity and Selectivity of Fischer Tropsch catalysts" American Chemical Society 2007 National Meeting, Boston, MA, August 19-23, 2007.

168. Anand, M., You, S-S., Kitchens, C. L., Ashurst, W. R., Roberts, C. B., "Fractionation of Metal and Semiconductor Nanoparticles using $CO_2$-expanded Liquids: Experiment and Theory," American Chemical Society 2007 National Meeting, Boston, MA, August 19-23, 2007 ***(Invited Lecture)***

169. Durham, E.; Bordawekar, M.; Roberts, C.B.; "Effects of Super-Critical Fluid Extraction on the Activity and Selectivity of Fischer Tropsch Catalysts," 21st Annual Meeting of the Consortium for Fossil Fuel Science, August, 2007.

170. Hurst, K.M.; Saunders, S. R.; Liu, J.; Anand, M.; You, S.S.; Roberts, C.B.; "Metal and Semiconductor Nanoparticle Deposition and Size Fractionation Using $CO_2$-Expanded Liquids and Supercritical $CO_2$ Processing," Supergreen Conference 5th International Symposium on Supercritical Fluids, Hoam Convention Center, Seoul National University, South Korea, November 28 - December 1, 2007. ***(Invited Keynote Lecture)***

171. Durham, E.; Bordawekar, M.; Roberts, C.B.; "Supercritical Fluid Solvent Effects on Activity and Selectivity in Fischer Tropsch Synthesis," 2007 American Institute of Chemical Engineers Annual Meeting: Catalysis and Reaction Engineering Division, Salt Lake City, UT, November 4-9, 2007.

172. Liu, J.; He, F.; Durham, E.; Zhao, D.; Roberts, C.B.; "Green Synthesis of Pd Nanoparticles for Catalyic Hydrodechlorination of Environmentally Deleterious Trichloroethylene," 2007 American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

173. Liu, J.; Roberts, C.B.; "Green Synthesis and Seed-Mediated Growth of Sodium Carboxymethyl Cellulose Stabilized Metal Nanoparticles," 2007 American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

174. Hurst, K.M.; Ashurst, W.R.; Roberts, C.B.; "Investigating the Effect of Gold Nanoparticle Deposition via $CO_2$-expanded Liquids on Micromachine Reliability," 2007 American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

175. Anand, M.; You, S.S.; Hurst K.M.; Saunders, S.R.; Kitchens, C.L.; Ashurst, W.R.; Roberts, C.B.; "Thermodynamic Analysis of the Gas Expanded Liquid Nanoparticle Size Separation Process," 2007 American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

176. Bhosale, P.; Hurst, K.M.; Roberts, C.B.; Stretz, H.A.; "$CO_2$-expanded Liquid Deposition of Organoclay Thin Films," 2007 American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

177. Obrzut, D.L.; Sullivan, B.P.; Monfort, A.W.; Roberts, C.B.; Duke, S.R.; "Spray And Particle Characteristics of SAS Precipitation of Poly(Methyl Methacrylate-Co-Vinyl Pyrrolidone)/Ethanol Solutions," American Institute of Chemical Engineers 2007 Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

178. Saunders, S.R.; Anand, M.; Roberts, C.B.; "Scale-Up of a Nanoparticle Size-Selective Fractionation Process Using $CO_2$-Expanded Liquids", American Institute of Chemical Engineers Annual Meeting, Salt Lake City, UT, November 4-9, 2007.

179. Liu, J.; He, F.; Zhao, D.; Roberts, C.B.; "Green Synthesis of Pd Nanoparticles Exhibiting High Catalytic Activities for the Hydrodechlorination of Environmentally Deleterious Trichloroethylene," 11th Green Chemistry and Engineering Conference, Washington, DC. June 26-29, 2007.

180. Liu, J.; Sutton, J.; Roberts, C.B.; "Green Synthesis and Extraction of Pt Nanoparticles for the Construction of Ordered Arrays," 11th Green Chemistry and Engineering Conference, Washington, DC. June 26-29, 2007.

181. Liu, J.; He, F.; Zhao, D., Roberts, C.B.; "Sugar Stabilized Pd Nanoparticles Exhibiting High Catalytic Activities for Hydrodechlorination of Environmentally Deleterious Trichloroethylene," International Symposium on Relations between Homogeneous and Heterogeneous Catalysis, University of California, Berkeley, July 16-20, 2007.

182. Zhao, D.; He, F.; Roberts C.; "Stabilized Zero-valent Nanoparticles for Rapid Destruction of Chlorinated Hydrocarbons." Interagency Workshop on Environmental Implications, US-EPA, Washington D.C., September 5–7, 2007.

183. Roberts, C.B.; Alabama Agriculture Symposium, Alternative Sources of Energy panel, The Legends, Prattville, AL, February 8-9, 2007.

184. Roberts, C.B.; "Metal and Semiconductor Nanoparticle Deposition and Separation using $CO_2$-expanded Liquids and Supercritical $CO_2$ Processing," Tulane University, April 27, 2007. ***(Invited Seminar)***

185. Roberts, C. B., Anand, M., Liu, J., "Fractionation of Metal and Semiconductor Nanoparticles and their Deposition into Wide Area Thin Films and Ordered Arrays using $CO_2$-Expanded Liquid Solutions," 6th European Congress of Chemical Engineering, Copenhagen, September 16-21, 2007.

186. Roberts, C.B.; Durham, E.; "Supercritical Fluids as Reaction Media for Fischer Tropsch Synthesis," 6th European Congress of Chemical Engineering, Copenhagen, September 16-21, 2007.

187. Durham, E.; Bordawekar, M.; Roberts, C.B.; "Characterization and Control of the Product Distribution in Fischer Tropsch Synthesis in Supercritical Hexanes to Enhance Diesel Selectivity," 20th Annual Meeting of the Consortium for Fossil Fuel Science, August, 2006.

188. Bordawekar, M.V.; Durham, E.; Liu, J.; Roberts, C.B.; "Hydrogenation of Toluene and Fischer Tropsch (FT) Liquids in Supercritical Carbon Dioxide ($CO_2$) to Produce Hydrogen Carrier Fuels," 20th Annual Meeting of the Consortium for Fossil Fuel Science, August, 2006.

189. Durham, E.; Elbashir, N.O.; Roberts, C.B.; "An Investigation into Supercritical Fluids as a Reaction Media for Fischer Tropsch Synthesis," American Institute of Chemical Engineers Annual Meeting (2006): Catalysis and Reaction Engineering Division, Advances in CO Hydrogenation I Section, presentation 616d, San Francisco, CA, November 12-17, 2006.

190. Liu, J.; Sutton, J.; Roberts, C.B.; "A Facile Nanoparticle Synthesis/Extraction Strategy to Target Pt Nanoparticle Microarrays and Superlattices," 2006 Annual American Institute of Chemical Engineers meeting, San Francisco, CA, November 12-17, 2006.

191. Liu, J.; Anand, M.; Roberts, C.B.; "Deposition of Metal Nanoparticles into Wide Area Thin Films and Ordered Arrays Using $CO_2$-Expanded Liquids," 2006 Annual American Institute of Chemical Engineers meeting, San Francisco, CA, November 12-17, 2006.

192. Obrzut, D.L.; Sullivan, B.P.; Roberts, C.B.; Duke, S.R.; "Visualization of Spray Characteristics and Resulting Particles in SAS at Different Solute and Solvent Misciblities," 2006 American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 12-17, 2006.

193. Obrzut, D.L.; Roberts, C. B.; Duke, S. R.; "Precipitation using Carbon Dioxide as a Solvent in a Closed-loop Thermosyphon," 2006 American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 12-17, 2006.

194. Anand, M., Bell, P. W., Roberts, C. B.; "Synthesis and Steric Stabilization of Silver Nanoparticles in Neat Carbon Dioxide Solvent Using Fluorine-Free Compounds," American Institute of Chemical Engineers 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.

195. Anand, M.; Odom, L.; Roberts, C.B.; "Separation of Polydisperse Metal and Semiconductor Nanoparticle Populations into Monodisperse Fractions using $CO_2$ Expanded Liquids," 2006 American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 12-17, 2006.

196. Liu, J.; Anand, M.; Roberts, C.B.; "Synthesis and Extraction of β-D glucose Stabilized Au Nanoparticles Processed into Low Defect, Wide Area Thin Films And Ordered Arrays Using $CO_2$-Expanded Liquids," 10th Green Chemistry & Engineering Conference, Washington, DC., June 26-30, 2006.

197. Liu, J.; Qin, G.; Ikushima, Y.; Roberts, C.B.; "Facile "Green" Synthesis, Characterization and Novel Catalytic Function of β-D glucose-stabilized Au Nanocrystals," 10th Green Chemistry & Engineering Conference, Washington,DC., June 26-30, 2006.

198. Anand, M., Bell, P.W., Roberts, C. B.; "Benign Process for Silver Nanoparticles' Synthesis and Processing in Neat Carbon Dioxide Solvent Using Flourine-Free Compounds," 10th Annual Green Chemistry and Engineering Conference, Washington, DC, June 26-30, 2006.

199. Roberts, C.B.; "Fischer-Tropsch Fuels; Diesel Fuel from Biomass: A Gas to Liquids Approach", Auburn Pulp and Paper Foundation Annual Meeting, Biorefining Strategic Research Panel, October 5, 2006.

200. Roberts, C.B.; "Biorefining and Alternative Energy Research," AU Innovation and Partnership Forum, Grand National, Opelika, AL, November 3, 2006.

201. Durham, E.; Bordawekar, M.; Roberts, C.B.; "Selectivity Control in Fischer Tropsch Synthesis Using a Supercritical Fluid Reaction Media," Alternative Energy Solutions From Alabama's Natural Resources Conference, Auburn University, October 23-24, 2006.

202. Roberts, C.B.; "Fractionation and Separation of Polydisperse Nanoparticle Populations into Distinct Monodisperse Fractions Using $CO_2$ Gas Expanded Liquids," Poster presentation at NETL contractors meeting, University Coal Research / Historically Black Colleges and Universities & Other Minority Institutions Contractors Review Meeting, June 6-7, 2006.

203. Roberts, C.B.; "Metallic Nanoparticle Deposition and Separation using $CO_2$-expanded Liquids and Supercritical $CO_2$ Processing," Georgia Tech, April 5, 2006. ***(Invited Seminar)***

204. Roberts, C.B.; "Metallic Nanoparticle Deposition and Separation using $CO_2$-expanded Liquids and Supercritical $CO_2$ Processing," Tennessee Tech University, March 30, 2006. ***(Invited Seminar)***

205. Liu, J.; Anand, M.; Bell, P.W.; Roberts, C.B.; "Assembly of Structurally Ordered Nanoparticle Thin Films Utilizing a $CO_2$ Expended Liquid Deposition Strategy," 2005 American Institute of Chemical Engineers Annual meeting, Cincinnati, OH, October 30 – November 4, 2005.

206. Fan, X.; Liu, J.; Enick, R.M.; Roberts, C.B.; "Oxygenated Hydrocarbon Ionic Surfactants Exhibit $CO_2$ Solubility," 2005 American Institute of Chemical Engineers Annual meeting, Cincinnati, OH, October 30 – November 4, 2005.

207. Anand, M., Bell, P. W., Liu, J., Roberts, C. B., "Size Selective Fractionation of Nanoparticles using the Tunable Solvent Properties of $CO_2$ Gas Expanded Liquids," American Institute of Chemical Engineers 2005 Annual Meeting, Cincinatti, October 30 - November 4, 2005.

208. Bell, P.W.; Anand, M.; Liu, J.; Roberts, C.B.; "Advantages of Tunable $CO_2$ Solvent Systems in Metallic Nanoparticle Deposition and Separation Processes," 2005 American Institute of Chemical Engineers Annual meeting, Cincinnati, OH, October 30 – November 4, 2005.

209. Bell, P.W., Anand, M., McLeod, M.C., Fan, X., Enick, R.M., Roberts, C.B., "Stable Dispersions of Nanoparticles in Dense $CO_2$ Using Non-Flourinated Ligands" 2005 American Institute of Chemical Engineers Annual Meeting, Cincinnati, October 30 – November 4, 2005.

210. Obrzut, D. L., Bell, P.W., Roberts, C.B., Duke, S., "Visualization of the Effects of Processing Conditions on the Spray Characteristics in SAS Precipitation," 2005 American Institute of Chemical Engineers Annual Meeting, Cincinnati, October 30 – November 4, 2005.

211. Boroughs, D.; Chen, Q.; Beckman, E.J.; Roberts, C.B.; "Kinetic Investigations of Propylene Epoxidation Using in Situ Generated $H_2O_2$ in $CO_2$ Solvent Media", 2005 American Institute of Chemical Engineers Annual Meeting, Cincinnati, OH, October 30 –November 4, 2005.

212. Bell, P.W., Anand, M., Liu, J., Roberts, C.B., "Advantages of Tunable $CO_2$ Solvent Systems in Metallic Nanoparticle Deposition and Separation Processes," 2nd Int'l Conference on Green and Sustainable Chemistry and 9th Annual Green Chemistry and Engineering Conference, Washington, DC, June 20-24, 2005.

213. Obrzut, D. L., Bell, P.W., Roberts, C.B., Duke, S., "Visualization of the Effects of Bulk Fluid Temperature, Pressure, and Density on the Supercritical Antisolvent Precipitation Process," International Symposium on Supercritical Fluids, Orlando, FL., May 1-4, 2005.

214. McLeod, M.C., Anand M., Kitchens, C.L.; Roberts, C.B.; "Deposition and Separation of Metallic Nanoparticles using $CO_2$-Expanded Liquids and Supercritical $CO_2$ Processing," International Symposium on Supercritical Fluids, Orlando, FL, May 1-4, 2005. ***(Invited Lecture)***

215. Elbashir, N.O.; Roberts, C.B.; Dutta, P.; Manivannan, A.; Seehra, M.S.; "Stability and Structure of Cobalt Catalytic Systems in Fischer-Tropsch Synthesis: Supercritical Fluid Media versus Conventional Gas-Phase Media," International Symposium on Supercritical Fluids; Orlando, FL., May 1-4, 2005.

216. Anand, M.; McLeod, M.C.; Roberts, C.B.; "Efficient Separation and Size Selection of Metallic Nanoparticles Using $CO_2$ Tunable Solvent Systems," International Symposium on Supercritical Fluids; Orlando, FL., May 1-4, 2005.

217. Elbashir, N.O.; Roberts, C.B.; Dutta, P.; Seehra, M.S;. "Stability of Cobalt Catalyst Structure and Performance in Fischer-Tropsch synthesis: Supercritical Fluid media vs. Conventional Gas Phase Media," 230th American Chemical Society National Meeting, Washington, DC, .August 28-September 1, 2005.

218. Enick, R.; Beckman, E.; Johnson, K.; Hong, L.; Fan, X.; Wang, Y.; Tapriyal, D.; Kim, I.; Paik, I.; Hamilton, A.; Thies, M.; Crosthwaite, J.; Roberts, C.B.; McLeod, M.C.; Liu, J.C.. "$CO_2$-soluble Polymers, Surfactants, and Nanoparticles Precursors Composed of C, H and O," Pacifichem, 2005.

219. McLeod, M.C.; Anand, M.; Roberts, C.B.; "Metallic Nanoparticle Deposition and Separation using $CO_2$-expanded Liquids and Supercritical $CO_2$ Processing," 7th World Conference of Chemical Engineering; Glasgow, Scotland; 10-14 July, 2005.

220. Elbashir, N.O.; Huang, X.; Roberts, C.B.; "Supercritical Phase Fischer-Tropsch Synthesis" 7th World Conference of Chemical Engineering; Glasgow, Scotland; 10-14 July, 2005.

221. Roberts, C.B.; "Metallic Nanoparticle Deposition and Separation using $CO_2$-expanded Liquids and Supercritical $CO_2$ Processing," North Carolina State University, January 31, 2005. ***(Invited Seminar)***

222. Roberts, C.B.; "Enhanced Hydrocarbon Chain-growth in Supercritical-phase Fischer-Tropsch Synthesis: Experiments and Modeling," UOP Corporation, Des Plaines, IL, May 12, 2005. ***(Invited Seminar)***

223. Elbashir, N.O.; Roberts, C.B.; "Advancement of Supercritical Fluids Applications in Fischer-Tropsch Synthesis," Gordon Research Conference, Hydrocarbon Resources, Ventura, Los Angeles, CA, January, 2005. (Best Scientific Quality and Graphical Layout Award)

224. Elbashir, N.O.; Roberts, C.B.; Dutta, P.; Manivannan, A.; Seehra, M.S.; "An Investigation of Cobalt, Iron, and Ruthenium Catalyst Performance in Supercritical Phase Fischer-Tropsch Synthesis," 19th Annual Technical Meeting of the Consortium for Fossil Fuel Science, Stonewall Resort, WV, 2005.

225. Elbashir, N.O.; Roberts. C.B.; "Reaction Pathway and Kinetic Modeling of Fischer-Tropsch Synthesis over an Alumina Supported Cobalt Catalyst in Supercritical-hexane." Fischer-Tropsch:

Material, Theories, and Practice; 227th American Chemical Society National Meeting, Anaheim, CA, Division of Petroleum Chemistry, American Chemical Society, Anaheim CA, March 28-April 1, 2004.

226. Kitchens, C.L.; Roberts, C.B.; McLeod, M.C.; "Metallic Nanoparticle Synthesis in Supercritical Fluid Based Reverse Micelles," 227th American Chemical Society National Meeting, Anaheim, CA, March 28-April 1, 2004.

227. McLeod, M.C.; Roberts, C.B.; Kitchens, C.L.; "Metallic Nanoparticle Production using Supercritical Carbon Dioxide as a Tunable Solvent," 227th American Chemical Society National Meeting, Anaheim, CA, March 28-April 1, 2004.

228. Roberts, C.B.; Kitchens, C.L.; McLeod, M.C.; "Governing Metallic Nanoparticle Synthesis Through Steric Stabilization Within Liquid and Supercritical Fluid Reverse Micelles," Particles 2004 Conference: Particle Synthesis, Characterization, and Particle-Based Advanced Materials, Orlando, FL, March 6-9, 2004. ***(Invited Paper)***

229. Kitchens, C.L.; Roberts, C.B.; "Tailored Synthesis of Metallic Nanoparticles within Compressed and Supercritical Fluid Reverse Micelles," Particles 2004 Conference: Particle Synthesis, Characterization, and Particle-Based Advanced Materials, Orlando, FL, March 6-9, 2004.

230. Roberts, C.B.; "Governing Metallic Nanoparticle Synthesis Through Steric Stabilization Within Liquid And Supercritical Fluid Reverse Micelles," Vanderbilt University, January 26, 2004. ***(Invited Seminar)***

231. Roberts, C.B.; "Supercritical Solvent Effects on Nanoparticle Synthesis in Reverse Micelles," Argonne National Laboratory, January 15, 2004. ***(Invited Seminar)***

232. Roberts, C.B.; "Synthesis of Metallic Nanoparticles via Reduction Reactions in Supercritical Fluid Solvents," Chairmen of the European Research Councils' Chemistry Committees - Young Chemists' Workshop on Neoteric solvents as reaction media: reality and future, St. Malo, France, April 17-21, 2004. ***(Invited Seminar)***

233. Elbashir, N.O.; Roberts, C.B.; "Impact of Cobalt-based Catalyst Characteristics on Conventional Gas-Phase and Supercritical Phase Fischer-Tropsch Synthesis Performance," 18th Annual Technical Meeting of the Consortium for Fossil Fuel Science, Stonewall Resort, West VA, August, 2004.

234. Roberts, C.B.; "Gas-to-Liquids Technology," TAPPI Paper Summit, May 3-5, 2004

235. Bell, P.W.; Thakur, R.; Gupta, R.B.; Roberts, C.B.; "Reactive Polymerization in the Supercritical Antisolvent Precipitation Process," 11th International Symposium on Supercritical Fluid Chromatography, Extraction, & Processing, Pittsburgh, August 1-4, 2004.

236. Obrzut, D.L.; Bell, P.W.; Stephens, A.P.; Emerson, Z. I.; Roberts, C. B.; Duke, S.R.; "High-Resolution Visualization of Supercritical Antisolvent (SAS) Precipitation Processes," 11th International Symposium on Supercritical Fluid Chromatography, Extraction, & Processing, Pittsburgh, August 1-4, 2004.

237. Bell, P.W.; Stephens, A.P.; Obrzut, D. L.; Emerson, Z.I.; Roberts, C.B.; Duke, S.R.; "High-Resolution Visualization of Supercritical Antisolvent (SAS) Precipitation Processes," 2004 American Institute of Chemical Engineers Annual Meeting, Austin, November 7-12, 2004.

238. Bell, P.W.; Thakur, R.; Gupta, R.B.; Roberts, C.B.; "Reactive Polymerization in the Supercritical Antisolvent Precipitation Process", 2004 American Institute of Chemical Engineers Annual Meeting, Austin, November 7-12, 2004.

239. McLeod, M.C.; Kitchens, C.L.; Fan, X.; Enick, R.; Roberts, C.B.; "Uniform Metallic Nanoparticle Film Formation Utilizing $CO_2$-Expanded Liquids and Supercritical $CO_2$ Processing," 2004 American Institute of Chemical Engineers Annual Meeting, Austin, TX, November 2004.

240. Elbashir, N.O.; Roberts, C.B.; "Influence of Cobalt Based Catalysts Characteristics on Fischer-Tropsch Synthesis in Conventional Gas-Phase Media and Supercritical Phase Media." 2004 American Institute of Chemical Engineers Annual Meeting, Austin, TX, November, 2004. (Award for

the Best Poster in Kinetics, Catalysis and Reaction Engineering sponsored by the Catalysis and Reaction Engineering Division)

241. Kitchens, C.L.; Roberts, C.B.; "Formation of Diamond Shaped Aggregates of Copper Nanoparticles Using Compressed and Supercritical Fluids," 2004 American Institute of Chemical Engineers Annual Meeting, Austin, TX, November, 2004.

242. Kitchens, C.L.; Roberts, C.B.; "Neutron Spin Echo Study of Solvent Effects on AOT Reverse Micelle Dynamics in High Pressure Compressible Fluids", 2004 American Institute of Chemical Engineers Annual Meeting, Austin, TX, November, 2004.

243. Elbashir, N.O.; Roberts, C.B.; "Selective Control of hydrocarbon Product Distribution in Supercritical phase Fischer-Tropsch Synthesis." 228th American Chemical Society National Meeting, Philadelphia, PA, August, 2004.

244. Elbashir N.O.; Huang X.; Boroughs D.; Roberts C.B.; "Enhanced hydrocarbon chain-growth in SCF Fischer-Tropsch synthesis: Experiments & Modeling," American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 21, 2003.

245. Bell, P.W.; Thote, A.J.; Park, Y.; Gupta, R.B.; Roberts C.B.; "Lewis Acid and Lewis Base Interactions between Carbon Dioxide and Carboxylic Acids Using High Pressure FTIR and NMR Spectroscopy," American Institute of Chemical Engineers Annual Meeting , San Francisco, CA, November 17, 2003.

246. Bell, P.W., Thote, A.J., Park, Y., Gupta, R.B., Roberts, C.B., "Supercritical Fluid Solvent Effects on Carboxylic Acid Dimer Formation," American Institute of Chemical Engineers 2003 Annual Meeting, San Francisco, November 16-21, 2003.

247. McLeod, M.C.; Enick, R.M.; Beckman, E.J.; Roberts C.B. "Nanoparticle Synthesis in Novel Carbon Dioxide Based Reverse Micelle Systems" American Institute of Chemical Engineers Annual Meeting , San Francisco, CA, November 17, 2003.

248. Fan, X.; Potluri, V.; McLeod, M.C.; Hamilton, A.; Roberts C. B.; Beckman, E.J.; Enick, R.M.; "The Design of Hydrocarbon-Based $CO_2$-Soluble Ionic and Nonionic Surfactants" American Institute of Chemical Engineers Annual Meeting , San Francisco, CA, November 20, 2003.

249. Kitchens, C.L.; McLeod, M.C.; Roberts C.B. "Metallic Nanoparticle Synthesis, Stabilization and Modeling in Supercritical Fluid Based Reverse Micelles" American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 20, 2003.

250. Roberts, C.B.; Elbashir, N.O.; Huang, X.; "Influence of Solvent-Reactant Mixture Phase Behavior on Supercritical-Phase Fisher-Tropsch Synthesis", 17th Annual Technical meeting of the Consortium for Fossil Fuel Science was held at Oglebay Resort, Wheeling, WV, August 4, 2003.

251. Elbashir, N.O.; Huang, X.; Boroughs, D.; Roberts, C.B.; "An Approach to Understand Enhanced Hydrocarbon Chain-Growth in Supercritical-Phase Fischer-Tropsch Synthesis", 17th Annual Technical meeting of the Consortium for Fossil Fuel Science, Oglebay Resort, Wheeling, WV, August 5, 2003.

252. Elbashir, N.O.; Roberts, C.B.; "Influence of Solvent–Reactant Mixture Phase Behavior on Supercritical-Phase Fisher-Tropsch Synthesis," 17th Annual Technical meeting of the Consortium for Fossil Fuel Science, Oglebay Resort, Wheeling, WV, August 5, 2003.

253. Bell, P.W.; Thote, A.J., Park, Y.; Gupta, R.B.; Roberts, C.B. "Supercritical Fluid Solvent Effects on Carboxylic Acid Dimer Formation," 6th International Symposium on Supercritical Fluids, paper no. PTp14, Versailles, France, April 28 - 30, 2003.

254. Roberts, C.B.; McLeod, M.C., Kitchens, C.L..; Gale, W.P.; Beckman, E.J. "Synthesis and Stabilization of Metallic Nanoparticles and Pre-Metallic Intermediates in PFPE/$CO_2$ Reverse Micelle Systems," 6th International Symposium on Supercritical Fluids, paper no. Rm2, Versailles, France, April 28 - 30, 2003.

255. Kitchens, C.L..; McLeod, M.C., Roberts, C.B.; "Synthesis and Modelling of Metallic Nanoparticles in Compressed Liquid and Supercritical Fluid Based Reverse Micelles." 6th International Symposium on Supercritical Fluids, paper no. PRm5, Versailles, France, April 28 - 30, 2003.

256. Elbashir, N.O., Huang, X.; Roberts, C.B. "Fischer Tropsch Synthesis Over a Cobalt Catalyst in Supercritical Solvents", poster presentation, 2003 Gordon Research Conference on Hydrocarbon Resources, Holiday Inn, Ventura, CA, Jan 12-17, 2003.

257. Kitchens, C.L.; McLeod, M.C.; Roberts, C.B.; "Solvent Effects on Metallic Nanoparticles in Compressed Liquid and Supercritical Fluid Based Reverse Micelles," American Institute of Chemical Engineers Annual Meeting, Indianapolis, November 4, 2002.

258. Bell, P.W.; Park, Y.; Thote, A.J.; Gupta, R. B.; Roberts, C.B.; "Supercritical Fluid Solvent Effects of Carboxylic Acid Dimer Formation," American Institute of Chemical Engineers Annual Meeting, Indianapolis, November 6, 2002.

259. Huang, X.; Elbashir, N.O.; Roberts, C. B. "Fischer Tropsch Synthesis Over Cobalt Catalyst in Supercritical Hexane: Comparative Study with the FT Gas Phase Reaction," American Institute of Chemical Engineers Annual Meeting, Indianapolis, November 5, 2002.

260. McLeod, M.C.; Horn, J.J.; Kitchens, C.L.; Bell, P.W.; Roberts, C.B.; "Metallic Nanoparticles Synthesis via Reduction Reactions in Supercritical Fluid Media," American Institute of Chemical Engineers Annual Meeting, Indianapolis, November 7, 2002.

261. Elbashir, N.O.; Abdul Mutalib M.I.; Roberts, C.B.; "Optimization of Solvent Extraction Parameters for Recycling Used Lubricating Oil," American Institute of Chemical Engineers Annual Meeting, Indianapolis, November 6, 2002. (Award for the Best Poster in Advances in Extraction sponsored by Chevron Texaco and the Separations Division)

262. Huang, X.; Elbashir, N.O.; Roberts, C.B., "Fischer Tropsch Synthesis over Cobalt Catalyst in Super Critical Hexane: Comparative Study with the FT gas phase reaction" 16th Annual Technical Meeting of the Consortium for Fossil Fuel Science - C1 Chemistry for the Production of Transportation Fuel, Rocky Gap Resort, Cumberland, MD, August 4-7, 2002.

263. Roberts, C.B.; Huang, X.; McLeod, M.C.; Kitchens, C.; Elbashir, N.O.; "Green Chemistry and Engineering with Supercritical Fluid Solvents", International Conference on the Fiber Industry and Environmental Complexity, Auburn, AL, January 28-29, 2002.

264. Roberts, C.B.; "Supercritical Fluids in Chemical Synthesis and Materials Processing", Eastman Chemical, Kingsport, TN, March 21, 2002 ***(Invited Seminar)***

265. Huang, X.; Roberts, C.B.; "Reaction Behavior of Fischer-Tropsch Synthesis in Near-critical and Supercritical Hexane Media", 223rd American Chemical Society - National Meeting, Orlando, FL, April 8, 2002.

266. Martin, T.M.; Bandi, N.; Schulz, R.; Roberts, C.B.; Kompella, U.B.; "Budesonide Microparticles Prepared by Spraying in Supercritical $CO_2$" , 2001 Annual AAPS meeting, 2001.

267. Roberts, C.B.; Curtis, C.W.; Huang, X. "Supercritical Fluids as Alternative Reaction Media for Fischer-Tropsch Synthesis, 15th Annual Technical Meeting of the Consortium for Fossil Fuel Liquefaction Science - C1 Chemistry for the Production of Transportation Fuel, Lexington, Kentucky, August 2-8, 2001.

268. Huang, X.; Curtis, C.W.; Roberts, C.B.; "Supercritical Fluid Solvent Effects on Fischer-Tropsch Synthesis", 10th International Symposium on Supercritical Fluid Chromatography, Extraction and Processing, Myrtle Beach, SC, August 19-22, 2001.

269. McLeod, M.C.; Kitchens, C.L.; Miller, M.E.; Roberts, C.B.; "Synthesis and Stabilization of Metallic Nanoparticles and Pre-Metallic Intermediates in Supercritical Carbon Dioxide", 10th International Symposium on Supercritical Fluid Chromatography, Extraction and Processing, Myrtle Beach, SC, August 19-22, 2001. (This contribution won best poster)

270. Roberts, C.B; Kitchens, C.L.; McLeod, M.C.; "Supercritical Fluid Solvent Effects on Metallic Nanoparticle Synthesis in Reverse Micelles," The 2nd Georgia Tech Conference on Nanoscience and Nanotechnology, Atlanta, GA, September 21, 2001.

271. Roberts, C.B.; "Nano-Particle Synthesis in Supercritical Fluid and Liquid Reverse Micelle Systems," Mississippi State University, AL, October 9th, 2001. ***(Invited Seminar)***

272. Park, Y.; Gupta, R.B.; Curtis, C.W.; Roberts, C.B.; "The Roles of Density and Solvation on the Association of Formic Acid in Supercritical Fluids", American Institute of Chemical Engineers Annual Meeting, Reno, NV, November 4-9, 2001.

273. Roberts, C.B.; McLeod, M.C.; Kitchens, C.L. "Microemulsions in Supercritical Fluids: A Medium for Nano-Material Synthesis", American Institute of Chemical Engineers Annual Meeting, Reno, NV, November 4-9, 2001.

274. McLeod, M.C.; McHenry, R.; Miller, M.E.; Roberts, C.B.; "Synthesis and Stabilization of Metallic Nanoparticles and Pre-Metallic Intermediates in Supercritical Carbon Dioxide", American Institute of Chemical Engineers Annual Meeting, Reno, NV, November 4-9, 2001.

275. Huang, X.; Park, Y.; Curtis, C.W.; Roberts, C.B.; "Supercritical Fluids as an Alternative Reaction Medium for Fischer-Tropsch Synthesis", American Institute of Chemical Engineers Annual Meeting, Reno, NV, November 4-9, 2001.

276. Roberts, C.B.; "Alternative Processing with Supercritical Fluid Solvents", Ciba Specialty Chemicals, Macintosh, AL, December 5, 2001 ***(Invited Seminar)***

277. Roberts, C.B. "Microemulsions in Supercritical Fluids: A New Medium for Nanomaterial Synthesis," Ohio State University, Department of Chemical Engineering, May 31, 2001 ***(Invited Seminar)***

278. Roberts, C.B.; McHenry, R.; Miller, M.E. "Metallic Nanoparticle Synthesis in Supercritical Fluid Microemulsions," Particles 2001 Conference, Rosen Centre Hotel, Orlando, FL, February 26, 2001. ***(Invited Lecture)***

279. Roberts, C.B.; McHenry, R.; Miller, M.E. " Supercritical Fluid and Near-critical Fluid Solvent Effects on Nanoparticle Synthesis in Reverse Micelles," American Chemical Society National Meeting, San Diego, April 4, 2001.

280. Roberts, C.B.; Curtis, C.W.; Huang, X. "Supercritical Fluids as Alternative Reaction Media for Fischer-Tropsch Synthesis, 14th Annual Technical Meeting of the Consortium for Fossil Fuel Liquefaction Science - Cooperative Research in C1 Chemistry, The Woods Resort, West Virginia, July 30 - August 2, 2000.

281. Park, Y.; Roberts, C.B.; Curtis, C.W. "Depolymerization of SBR Rubber in Near-critical and Supercritical Water," 5th International Symposium on Supercritical Fluids (ISSF), 2000.

282. Roberts, C.B.; Khambaswadkar, K.C.; Cason, J.P. "Supercritical Fluid Solvent Effects on Metallic Nano-Particle Synthesis in Reverse Micelles," 5th International Symposium on Supercritical Fluids (ISSF), 2000. ***(Invited Paper)***

283. Cason, J.P.; Thompson, J.B.; Roberts, C.B.; "Solvent Effects on Metallic Nano-Particle Growth Behavior in Reverse Micelle Systems," American Institute of Chemical Engineers Annual Meeting, Dallas, Nov. 3, 1999.

284. Park, Y.; Curtis, C.W.; Roberts, C.B.; "Thermal and Oxidative Degradation of Styrene-Butadiene Copolymer in Supercritical Water," American Institute of Chemical Engineers Annual Meeting, Dallas, Nov. 2, 1999.

285. Cason, J.P.; Khambaswadkar, K.C.; Roberts, C.B.; "Metallic Nanocluster Formation in Reverse Micelles in Compressed Alkanes and Supercritical Carbon Dioxide," American Institute of Chemical Engineers Annual Meeting, Dallas, Nov. 2, 1999.

286. Martin, T.M.; Gupta, R.B.; Roberts, C.B.; "Measurements and Modeling of Cloud Point Behavior for Poly(propylene glycol) in Ethane and in Ethane/Cosolvent Mixtures at High Pressure," American Institute of Chemical Engineers Annual Meeting, Dallas, Nov. 1, 1999.

287. Martin, T.M.; Gupta, R.B.; Roberts, C.B.; "Measurements and Modeling of Cloud Point Behavior for Poly(propylene glycol in Ethane and in Ethane/Cosolvent Mixtures at High Pressure," United Engineering Foundation Conference - Material Processing in Supercritical Fluids, Davos, Switzerland, September, 1999.

288. Roberts, C.B.; Khambaswadkar, K.C.; Cason, J.P.; " Nano-Material Synthesis in Supercritical Fluid Microemulsions," United Engineering Foundation Conference - Material Processing in Supercritical Fluids, Davos, Switzerland, September, 1999. ***(Invited Lecture)***

289. Roberts, C.B.; "Microemulsions in Supercritical Fluids," Georgia Institute of Technology, Department of Chemical Engineering, May 3, 1999. ***(Invited Seminar)***

290. Martin, T.M.; Gupta, R.B.; Roberts, C.B.; "Measurements and Modeling of Cloud Point Behavior for Poly(propylene glycol in Ethane and in Ethane/Cosolvent Mixtures at High Pressure," AICHE Spring Meeting, Houston TX, March 15, 1999.

291. Roberts, C.B. "Reverse Micelles in Supercritical Fluids: A New Medium for Nano-Material Synthesis," University of Notre Dame, Department of Chemical Engineering, March 2, 1999. ***(Invited Seminar)***

292. Roberts, C.B.; "Colloidal Particle Formation in Near-Critical and Supercritical Fluid Reverse Micelle Solutions", Georgia Institute of Technology, Specialty Separations Center, Atlanta, GA, June 1, 1998 ***(Invited Seminar)***

293. Park, Y.; Reaves, J.T.; Curtis, C.W.; Roberts, C.B.; "Remediation and Recycling of Tire Production Waste Material using Sub-critical and Supercritical Water Oxidation," American Institute of Chemical Engineers Annual Meeting, Miami, Nov. 16 1998.

294. Martin, T.M.; Roberts, C.B.; "Measurements and Modeling of Cloud Point Behavior for Polypropylene/n-Pentane and Polypropylene/n-Pentane/Carbon Dioxide Mixtures at High Pressure," American Institute of Chemical Engineers Annual Meeting, Miami, Nov. 16 1998.

295. Reaves, J.T.; Cason, J.P.; Khambaswadkar, K.C.; Roberts, C.B.; "Colloidal Particle Formation in Near-critical and Supercritical Fluid Reverse Micelle Solutions," American Institute of Chemical Engineers Annual Meeting, Miami, Nov. 16, 1998.

296. Roberts, C.B.; Cason, J.P.; Khambaswadkar, K.; Reaves, J.T.; "Cosolvent Effects on AOT Reverse Micelles and Colloidal Particle Production in Supercritical Fluid Mixtures," 215th Americal Chemical Society National Meeting, Dallas, April 1, 1998.

297. Reaves, J.T.; Roberts, C.B.; "Supercritical and Sub-critical Solvent Effects on Reactions," 215$^{th}$ American Chemical Society National Meeting, Dallas, March 29, 1998.

298. Reaves, J.T.; Roberts, C.B.; "Supercritical and Subcritical Solvent Effects on Diels-Alder Reactions," American Chemical Society National Meeting, Dallas, Mar. 29, 1998.

299. Reaves, J.T.; Roberts, C.B.; "Subcritical Solvent Effects on a Parallel Diels-Alder Reaction Network," American Institute of Chemical Engineers Spring Meeting, New Orleans, Mar. 11, 1998.

300. Reaves, J.T.; Roberts, C.B.; "Solvation Effects on Product Distribution of a Parallel Diels-Alder Reaction Network in Supercritical and Subcritical Fluids," American Institute of Chemical Engineers Annual Meeting, Los Angeles, Nov. 21 1997.

301. Thompson, J.B.; Cason, J.P.; Reaves, J.T.; Roberts, C.B.; "Colloidal Particle Formation in Supercritical Fluid Reverse Micelle Solutions," American Institute of Chemical Engineers Annual Meeting, Los Angeles, Nov. 18 1997.

302. Thompson, J.B.; Roberts, C.B.; "Investigation of Cosolvent Penetration of Reverse Micelles in Supercritical Fluid Micelles Systems", American Institute of Chemical Engineers Annual Meeting, Los Angeles, Nov. 17 1997.

303. Roberts, C.B.; Thompson, J.B.; "Spectroscopic Investigations of Reverse Micelles in Supercritical Fluid/Cosolvent Mixtures," 4$^{th}$ International Symposium on Supercritical Fluids, Sendai, Japan, May 11-14, 1997.

304. Roberts, C.B.; Griffith, A.T.; "Supercritical Fluid Applications in the Separation and Recovery of Comingled Plastic Waste," 4th International Symposium on Supercritical Fluids, Sendai, Japan, May 11-14, 1997.

305. Griffith, A.T.; Martin, T.M., Roberts, C.B.; "Supercritical Antisolvent Recovery of Carpet Waste," Second Conference on Recycling of Fibrous Textile & Carpet Waste, Atlanta, GA, May 19-21, 1997.

306. Roberts, C.B.; "Separation of Mixed Plastic Waste Using Supercritical Fluids," University of Toledo, Dept. of Chem. Eng., Feb. 14, 1997. ***(Invited Seminar)***

307. Griffith, A.T.; Lateef, A.A.; Roberts, C.B.; "Supercritical Fluid Applications in the Separation and Recovery of Comingled Plastic Waste," American Institute of Chemical Engineers Annual Meeting, Chicago, Nov. 13, 1996.

308. Thompson, J.B.; Roberts, C.B.; "Spectroscopic Investigations of Preferential Solvation of Reverse Micelles in Supercritical Fluid Solutions," American Institute of Chemical Engineers Annual Meeting, Chicago, Nov. 11, 1996.

309. Griffith, A.T.; Lateef, A.A.; Martin, T.M., Roberts, C.B.; "Supercritical Fluid Applications in the Separation and Recovery of Comingled Plastic Waste," American Chemical Society - Emerging Technologies in Hazardous Waste Management VIII, Birmingham, AL, Sept. 9, 1996.

310. Roberts, C.B.; Martin, T.M; Griffith, A.T. "Carpet and Recycling Research at Auburn University," Carpet Recycling Institute (CRI) - Recycling Symposium, Dalton, GA, June 5, 1996.

311. Roberts, C.B. "Supercritical Water Oxidation of Secondary Pulp and Paper Mill Sludge and Deinking Sludge," Auburn University Pulp and Paper Foundation Spring Meeting, Research and Technology Transfer Committee, May 1996.

312. Roberts, C.B.; "Preferential Dissolution and Supercritical Fluid Antisolvent Separation of Commingled Plastic Waste," Presented to Research Representatives of Monsanto Chemical Co. (Pensacola Technical Center), Research Briefing/Pre-proposal, Mar. 12, 1996.

313. Roberts, C.B. "Separation of Mixed Polymeric Waste Using Supercritical Fluids and Selective Dissolution," University of Missouri-Columbia, Dept. of Chem. Eng., Mar. 7, 1996. ***(Invited Seminar)***

314. Roberts, C.B. "Reactions and Separations with Supercritical Fluids," Auburn University, Materials Engineering Dept., Feb. 20, 1996. ***(Invited Seminar)***

315. Roberts, C.B.; Thompson, J.B. "Spectroscopic Investigations of Reverse Micelles in Supercritical Fluid/Cosolvent Mixtures", American Institute of Chemical Engineers Spring Meeting, New Orleans, February, 1996.

316. Roberts, C.B.; Reaves, J.T. "Solvent Effects on the Reaction of p-Benzoquinone and Cyclopentadiene in Supercritical $CO_2$," American Institute of Chemical Engineers Annual Meeting, Miami Beach, Nov. 15, 1995.

317. Roberts, C.B. "Reactions and Molecular Structure in Supercritical Fluids," University of Alabama, Dept. of Chem. Eng., Nov. 2, 1995. ***(Invited Seminar)***

318. Roberts, C.B. "Time-Resolved Spectroscopic Investigations of Reactions and Molecular Structure in Supercritical Fluids", University of Tennessee, Dept. of Chem. Eng., Sept. 26, 1995. ***(Invited Seminar)***

319. Roberts, C.B. "Local Effects on the Hydrogen Abstraction Reaction of Triplet-Benzophenone in Supercritical Fluids," Oak Ridge National Laboratory, Chemical Technology Division, Sept. 25, 1995. ***(Invited Seminar)***

320. Roberts, C.B. "Time-Resolved Spectroscopic Investigations of Reactions and Molecular Structure in Supercritical Fluids," University of Virginia, Dept. of Chem. Eng., Feb. 23, 1995. ***(Invited Seminar)***

321. Roberts, C.B.; Zhang, J.; Chateauneuf, J.E.; Brennecke, J.F. "Reaction of Dilute Solutes with Oxygen in Supercritical Fluids," American Institute of Chemical Engineers Annual Meeting, San Francisco, Nov. 17, 1994.

322. Roberts, C.B.; Chateauneuf, J.E.; Brennecke, J.F. "Laser Flash Photolysis Studies of Molecular Structure from Reactions in Supercritical Fluids," American Institute of Chemical Engineers Annual Meeting, St. Louis, Nov. 9, 1993.

323. Roberts, C.B.; Zhang, J.; Chateauneuf, J.E.; Brennecke, J.F. "Laser Flash Photolysis Investigations of Diffusion-Controlled Reactions in Supercritical Fluids," American Institute of Chemical Engineers Annual Meeting, St. Louis, Nov. 8, 1993.

324. Roberts, C.B.; Zhang, J.; Chateauneuf, J.E.; Brennecke, J.F. "Laser Flash Photolysis Investigations of Diffusion-Controlled Reactions in Supercritical Fluids," NATO Advanced Study Institute on Supercritical Fluids- Fundamentals for Application, Antalya, Turkey, July 18-30, 1993.

325. Roberts, C.B.; Chateauneuf, J. E.; Brennecke, J. F. "Time-Resolved Spectroscopic Investigations to Probe Molecular Structure in Supercritical Fluids," presented at the 6$^{th}$ International Conference on Fluid Properties & Phase Equilibria for Chemical Process Design, Cortina, Italy, July 19-24, 1992.

326. Chateauneuf, J.E.; Roberts, C.B.; Brennecke, J.F.; "Laser Flash Photolysis Studies in Supercritical Fluids," poster presentation, 4$^{th}$ Inter-American Photochemical Society (IAPS) Winter Conference, Clearwater Beach, Fl., Jan. 1-5, 1992.

327. Roberts, C.B.; Chateauneuf, J.E.; Brennecke, J.F.; "Diffusion-Controlled Reaction Rates in Supercritical Fluids," American Institute of Chemical Engineers Annual Meeting, Los Angeles, Nov. 17-22, 1991.

328. Roberts, C.B.; Park, K.M.; Chateauneuf, J.E.; Brennecke, J.F.; "Pressure Effects on Solute/Cosolvent Reactions in Supercritical Fluids," American Institute of Chemical Engineers Annual Meeting, Los Angeles, Nov. 17-22, 1991.

329. Roberts, C.B.; Chateauneuf, J.E.; Brennecke, J.F. "Laser Flash Photolysis Studies of Benzophenone in Supercritical $CO_2$", American Chemical Society National Meeting, Atlanta, GA, April 14-19, 1991.

## RESEARCH GRANTS AND CONTRACTS RECEIVED

1. *EFRI E3P: Supercritical Extraction for the Elimination of End-of-Life Plastics,* National Science Foundation, PI: E. Davis, Co-PIs: Y. Peng and others, Senior Personnel: C.B. Roberts, $1,980,029, 01/01/2022 – 12/31/2025.

2. *Space Launch Systems Support,* The Boeing Company, PI: S. Taylor, Co-PI: C.B. Roberts, $1,992,819, 05/01/2018 – 06/30/2020.

3. *Modular Catalytic Partial Oxidation Reactors using Microstructured Catalyst Structures with Combined High Thermal Conductivity and Flame Extinction Capacity to Enhance Process Safety Margins and Enable High Per Pass Conversion and High Selectivity of Non-Diluted Reactants*, Department of Energy - RAPID (Rapid Advancement in Process Intensification Deployment Institute). Auburn PI: B.J. Tatarchuk, Co-PIs: M.R. Eden and others, Senior Personnel: C.B. Roberts, $1,185,283, 01/01/2019 – 06/30/2022.

4. *SYNOPSIS – Synthesis of Operable Process Intensification Systems,* Department of Energy - RAPID (Rapid Advancement in Process Intensification Deployment Institute). This project is primed by Texas A&M University (PI: E.N. Pistikopoulos) with Auburn University being a partner. Auburn PI: M.R. Eden, Co-PIs: S. Cremaschi and others, Senior Personnel: C.B. Roberts, $459,152, 09/01/2018 – 06/30/2022.

5. *Microfibrous Entrapped Sorbents for High Throughput Modular Process Intensified Gas Separation and Ion Exchange,* Department of Energy - RAPID (Rapid Advancement in Process Intensification Deployment Institute). This project is primed by IntraMicron (PI: P. Dimick) with Auburn University being a partner., Auburn PI: B.J. Tatarchuk, Co-PIs: M.R. Eden and others, Senior Personnel: C.B. Roberts, $1,043,127, 09/01/2018 – 12/31/2021.

6. *Modular Catalytic Desulfurization Units for Sour Gas Sweetening,* Department of Energy - RAPID (Rapid Advancement in Process Intensification Deployment Institute). This project is primed by IntraMicron (PI: P. Dimick) with Auburn University being a partner. Auburn PI: B.J. Tatarchuk, Co-PIs: M.R. Eden and others, Senior Personnel: C.B. Roberts, $280,363, 09/01/2018 – 06/30/2020.

7. *IGERT: Integrated Biorefining for Sustainable Production of Fuels and Chemicals*, National Science Foundation (NSF-IGERT), PI: M.R. Eden, Co-PIs: C.B. Roberts, S. Taylor, P.K. Raju, T. Gallagher, $4,439,000, 08/15/2011 – 07/31/2018. **Note:** This is the *first ever* NSF-IGERT program awarded to Auburn University. IGERT is the National Science Foundation's flagship interdisciplinary training program for educating U.S. Ph.D. scientists and engineers. This program provided funding for 35 Ph.D. students across the Auburn University campus.

8. *Southeastern Partnership for Integrated Biomass Supply Systems (IBSS)*, USDA-AFRI, PI: T. Rials (U. Tennessee), Lead PI for Auburn: S.E. Taylor, Co-PIs: C.B. Roberts and others, $15,008,000 (Total amount for AU: $4,519,000) 01/01/2012 – 06/30/2018. **Note:** This project is a major center grant proposal led by U. Tennessee.

9. *Microenvironment-sensitive multimodal contrast agent for prostate cancer diagnosis*, Department of Defense, PI: Allan David, Co-Investigators: C.B. Roberts, T.S. Denney, V. Petrenko, $333,000, 4/1/2013 – 3/31/2016.

10. *REU Site: Biofuels and Bioproducts Production from Lignocellulosic Biomass (NSF-REU),* PI: S. Adhikari; Faculty Investigator: C.B. Roberts and others; $335,748, 07/01/2012 – 6/30/2015

11. *Fuel and Oxygenate Co-Products From Biomass Fractionation and Advanced Catalytic Conversion Processes*, USDA-AFRI, PI: M.R. Eden, Co-PIs: C.B. Roberts, S. Taylor, S. Adhikari, $1,000,000, 01/01/2011 – 12/31/2015.

12. *Biomass to Liquid Fuels and Electrical Power*, Department of Energy Award No. DE-EE003115, PI: S. Taylor, Co-PIs: M.R. Eden, C. Roberts, $1,875,000, 06/01/2010 – 04/31/2015.

13. *Understanding the Effects of Nanoparticle Size and Ligand Chemistry on Pickering Emulsions*, Gulf of Mexico Research Initiative, PI: C.B. Roberts, $222,000, 2011-2014. **Note**: This project is part of a large multi-university consortium led by V. John (Tulane) entitled 'The Science and Technology of

Dispersants as Relevant to Deep Sea Oil Releases' with a total budget of $10,340,000. A total of 38 investigators from 22 institutions were invited to participate in this effort.

14. *Biomass Gasification Research*, Electric Power Research Institute (EPRI), PI: S. Adhikari, Co-PIs: O. Fasina, S. Taylor, M.R. Eden, C.B. Roberts, $374,995, 08/01/2011 – 07/31/2013.
15. *Integrated Biorefinery Optimization through Biomass Fractionation, Gasification and Advanced Catalytic Conversion Processes*, Southeastern Sun Grant Regional Grants Program, PI: M.R. Eden, Co-PIs: C.B. Roberts, S.E. Taylor, S. Adhikari, $250,000, 02/01/2010 – 01/31/2013.
16. *Systems Based Approaches for Conversion of Biomass to Bioenergy and Bioproducts*, Department of Energy Award No. DE-EE0000418, PI: S. Taylor, Co-PIs: M.R. Eden, C. Roberts, $951,500, 07/01/2009 – 09/01/2012.
17. *Development of Novel Gas-to-Liquid Technology in Near-Critical and Supercritical Phase Media,"* Texas Engineering Experiment Station, PI: C.B. Roberts, $75,000, 2009-2012.
18. *Novel Approaches in Fischer-Tropsch Synthesis of Ultra-clean Liquid Fuels from Coal and Biomass with Minimal Production of Carbon Dioxide*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, $578,600, 03/01/2008 – 06/30/2012. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $2,915,000.
19. *Military Fuels Research Program*, Department of Defense – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, $606,630, 07/01/2007 – 09/30/2011. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $4,044,200.
20. *Production of Gasoline, Diesel and Aviation Fuels from Biomass Using a Gas-to-Liquids Approach*, Alabama Department of Agriculture and Industries, PI: C.B. Roberts, Co-PI: M.R. Eden, $80,000, 01/01/2008 – 12/31/2010.
21. *Green Synthesis and Processing of Cobalt Nanocrystals of Controlled Size and their Deposition onto Carbon Nanofibers/Nanotubes using $CO_2$ Expanded Liquids: Novel Fischer-Tropsch Synthesis Catalysts for Clean Fuels Production*, American Chemical Society – Green Chemistry Initiative – Petroleum Research Fund, PI: C.B. Roberts, $57,604, 2008-2010.
22. *Tunable Fischer-Tropsch Synthesis for Production of Transportation Fuels from Biomass Derived Synthesis Gas*, Auburn University Center for Biofuels and Bioproducts, PI: C.B. Roberts, Co-PI: M.R. Eden, $75,479, 09/01/2007 – 08/31/2010.
23. *Synthesis and Application of a New Class of Stabilized Nanoscale Iron Particles for Rapid Destruction of Chlorinated Hydrocarbons in Soil and Groundwater*, Environmental Protection Agency, PI: D. Zhao, Co-PI: C.B. Roberts, $280,215. 2005-2010.
24. *Biorefining in the Agricultural Sector – Producing Fuels from Poultry Litter*, Alabama Agricultural Experiment Station, PI: M.R. Eden, Co-PIs: H.T. Cullinan, C.B. Roberts, $120,000, 10/01/2005 – 03/01/2007.
25. *Developing Innovative Cross-Disciplinary Curricula in Biological Engineering,* National Science Foundation, PI: S.E. Taylor, Co-PI: C.B. Roberts, $99,875.
26. *Ethics of the Nanoscale,* National Science Foundation, PI: C.W. Curtis, Co-PIs: C.B. Roberts and others, $200,000, 2006-2008.
27. *Fractionation and Separation of Polydisperse Nanoparticles into Distinct Monodisperse Fractions using $CO_2$,* Department of Energy – National Energy Technology Lab, PI: C.B. Roberts, $50,000, 2006-2008.
28. *Fischer-Tropsch Synthesis Studies,* UOP Corporation, PI: C.B. Roberts, $59,000, 2005-2008.
29. *Production and Storage of Hydrogen using C1 Chemistry*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, $1,074,000, 07/01/2005 – 06/30/2008. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $6,317,647.

30. *The Nature and Molecular Association and Solvation of Aliphatic and Perfluorinated Aliphatic Carboxylic Acids,* National Science Foundation, PI: Y. Park, Co-PI: C.B. Roberts, $229,984, 2004-2006.
31. *Supercritical Fluids Phase Fischer-Tropsch Synthesis*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, Co-PIs: R.B. Gupta, J.A. Guin, $337,731, 2004-2005. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $2,026,000.
32. *Supercritical Phase Fischer-Tropsch Synthesis: Phase Behavior and Enhancement of Activity and Production Distributions*, Nippon Oil Corporation, PI: C.B. Roberts, $70,444, 2003-2004.
33. *Supercritical Fluids Phase Fischer-Tropsch Synthesis*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, Co-PIs: R.B. Gupta, J.A. Guin, $337,731, 2003-2004. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $2,026,000.
34. *In-Situ Synthesis of $H_2O_2$ in $CO_2$: Platform for Green Oxidations,* NSF-EPA Technology for a Sustainable Environment (TSE) Program, PI: C.B. Roberts, $185,000, 2003-2008.
35. *Design and Optimization of Non-Fluorous $CO_2$-Philic Polymers: FTIR and Phase Behavior Investigations*, National Science Foundation, PI: C.B. Roberts, $162,230, 2002-2005.
36. *Solvent Effects on Reverse Micellar Dynamics and Their Impact on Nanoparticle Formation*, Department of Energy – Basic Energy Sciences, PI: C.B. Roberts, Co-PI: E. Beckman, $385,946, 2001-2004.
37. *Supercritical Fluids as an Alternative Reaction Medium for Fischer-Tropsch Synthesis*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, Co-PIs: J.A. Guin, $404,000, 2002-2003. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $2,424,000.
38. *Supercritical Fluids as an Alternative Reaction Medium for Fischer-Tropsch Synthesis*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.B. Roberts, Co-PIs: J.A. Guin, $250,000, 2001-2002. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation with a total budget of $1,500,000.
39. *Impact of Industrial Products and Processes on Biocomplexity: Generalized Systems Analysis with Applications to Fiber Products and Processes*, National Science Foundation Biocomplexity Program, PI: M.M. El-Halwagi, Co-PI: C.B. Roberts, $100,000, 2000-2002.
40. *High Pressure Solvent Delivery System for Investigation of Catalytic Reactions in Supercritical Fluids*, Auburn University Small Equipment Grant, PI: C.B. Roberts, $4,290, 2000-2001.
41. *Consortium for Fossil Fuel Liquefaction*, Department of Energy – Consortium for Fossil Fuel Science (CFFS), PI: C.W. Curtis, Co-PIs: C.B. Roberts, J.A. Guin, $945,000, 1999-2002. **Note**: This project is part of a major research program through the University of Kentucky Research Foundation.
42. *Production of Budesonide Particles for Pulmonary Delivery using Supercritical Fluid Antisolvent Precipitation Techniques*, Auburn University Biological Sciences Research Grant (Biogrants) Program, PI: C.B. Roberts, $55,051, 1998-2002.
43. *High Value Materials Production from Recycled Polymer Waste*, NSF-EPSCoR (Alabama) – Young Faculty Career Enhancement Program (YFCEP), PI: C.B. Roberts, $50,541, 1997-1999.
44. *Decontamination and Destruction of Pentachlorophenol Laden Soils with Supercritical Water, Extraction and Oxidation Techniques*, Alabama Department of Public Health: Alabama Legacy for Environmental Research Trust Fund (ALERT) Grant Program, PI: C.B. Roberts, $160,310, 1996-1999.
45. *Supercritical Fluid Separation and Recycling of Polymeric Textile Waste*, NSF-EPSCoR, PI: C.B. Roberts, $211,000, 1995-1999. **Note**: This project was an element of '*An Integrated Approach to the Added Value Reclamation of Solid Waste*' – PI: Y. Gowayed.

# MENTORING AND TEACHING ACTIVITIES

## POSTDOCTORAL RESEARCHERS AND VISITING SCHOLARS HOSTED

- Dr. Rui Xu, Postdoctoral Fellow and Research Fellow, 2014-2017
- Dr. Sihe Zhang, Postdoctoral Fellow, 2014-2015
- Dr. Joseph Ed Durham, Postdoctoral Fellow, 2011
- Dr. Nimir O. Elbashir, Postdoctoral Fellow, 2005
- Dr. Juncheng Liu, Postdoctoral Fellow, 2005-2009
- Dr. Seong Sik You, Visiting Scholar from Korea Institute of Science and Technology, 2007-2009
- Dr. Weirong Zhao, Visiting Scholar from Zhejiang University, 2010 (co-hosted with Dr. Don Zhao)

## THESES AND DISSERTATIONS DIRECTED AS MAJOR PROFESSOR

### *Completed*

1. David Roe, Ph.D. 2017
   Thesis Title: Effect of Carbon Supports on Supercritical Hexane Mediated, Fe-Catalyzed Fischer-Tropsch Synthesis
   Employment post graduation: Dynetics Corporation
2. Jie Zhong, Ph.D. 2016 (co-advised with W.R. Ashurst)
   Thesis Title: Synthesis and Gas-Expanded Liquid (GXL) Processing of Metal and Metal Oxide Nanoparticles: Fundamentals and Application
   Employment post graduation: Researcher at Fujian Institute of Research
3. Pranav Vengsarkar, Ph.D. 2015
   Thesis Title: Synthesis and Gas-Expanded Liquid (GXL) Processing of Metal and Metal Oxide Nanoparticles: Fundamentals and Application
   Employment post graduation: Postdoctoral researcher at Ga Tech, and Scientist R&D at Avantor, Inc.
4. Rajeshwar Chinnawar, Ph.D. 2015 (co-advised with S. Duke)
   Thesis Title: Investigation of Mass Transfer Phenomena in Supercritical Antisolvent Precipitation Processes
   Employment post graduation: Sr. R&D Engineer at Pall Biotech
5. Gregory C. Vaughan, M.S. 2015 (co-advised with M. Eden)
   Thesis Title: Equilibrium Modeling of Coal and Biomass Gasification
   Employment post graduation: KBR Incorporated
6. Charlotte Stewart, M.S. 2015
   Thesis Title: Conversion of Methanol to Hydrocarbons in a Supercritical Fluid Reaction Medium
   Employment post graduation: Quorum Software
7. Jennifer Duggan, Ph.D. 2014
   Dissertation Title: The Synthesis and Tunable Processing of Metallic and Magnetic Nanoparticles in a Functional Solvent System
   Employment post graduation: Albemarle Corporation
8. Sihe Zhang, Ph.D. 2013
   Dissertation Title: Production of Transportation Fuel Range Middle Distillates via Fischer-Tropsch Synthesis with Integrated Product Upgrading under Supercritical Phase Conditions
   Employment post graduation: Postdoc at Georgia Tech - Assistant Professor at West Virginia Tech
9. Rui Xu, Ph.D. 2013
   Dissertation Title: Synthesis of Methanol and Higher Alcohols from Syngas over K Promoted Cu Based Catalysts in Supercritical Solvent
   Employment post graduation: Postdoc at Georgia Tech - Research Engineer at Corteva Agriscience
10. Md. Mahmud, MChE 2011
    Employment post graduation: Ph.D. Lamar University – R&D Engineer at NextEra Energy Resources

11. Steven R. Saunders, Ph.D. 2011
    Dissertation Title: Use of Gas-eXpanded Liquids as Tunable Solvents for the Preparation of Well-Defined Nanomaterials at Relevant Scales
    Employment post graduation: Assistant Professor at Washington State University
12. Deborah Bacik, Ph.D. 2011
    Dissertation Title: Incorporating Green Chemistry Principles in Heterogeneous Catalysis Operations
    Employment post graduation: Founder and CEO of Serving The Homefront
13. Joseph E. Durham, Ph.D. 2010
    Dissertation Title: Supercritical Fluids for Fischer Tropsch Synthesis and Related Reactions
    Employment post graduation: Evonik Industries
14. Kendall M. Hurst, Ph.D. 2010
    Dissertation Title: Nanoparticle-Based Surface Modifications for Microtribology Control and Superhydrophobicity
    Employment post graduation: Chevron-Phillips Chemical Company
15. Mahesh Bordewekar, MChE 2008
    Employment post graduation: Lafarge Corporation
16. Daniel Obrzut, Ph.D. 2008
    Dissertation Title: Investigation of the Underlying Phenomena of Precipitation in Supercritcal Antisolvent Processes
    Employment post graduation: Abbott Laboratories
17. Madhu Anand, Ph.D. 2007
    Dissertation Title: Synthesis, Fractionization, and Thin Film Processing of Nanoparticles Using the Tunable Solvent Properties of Carbon Dioxide Gas Expanded Liquids
    Employment post graduation: Conoco Phillips Corporation
18. Philip W. Bell, Ph.D. 2005
    Dissertation Title: Specific Interactions of Carbon Dioxide in Supercritical Fluid Processes & Nanoparticle Processing
    Employment post graduation: Sabic Innovative Plastics
19. Nimir O. Elbashir, Ph.D. 2004
    Dissertation Title: Utilization of Supercritical Fluids in the Fischer-Tropsch Synthesis Over Cobalt-Based Catalytic Systems
    Employment post graduation: Assistant Professor of Chemical Engineering, Texas A&M University
20. M. Chandler McLeod, Ph.D. 2004
    Dissertation Title: Metallic Nanoparticle Production and Processing Using Supercritical Carbon Dioxide and Carbon Dioxide Gas-Expanded Liquids as Tunable Solvents
    Employment post graduation: Intel Corporation
21. Christopher L. Kitchens, Ph.D. 2004
    Dissertation Title: Metallic Nanoparticle Synthesis Within Reverse Micellar Micromulsion Systems
    Employment post graduation: Assistant Professor of Chemical Engineering, Clemson University
22. Xiwen Huang, Ph.D. 2003
    Dissertation Title: Supercritical Fluids as Alternative Reaction Media for Fischer-Tropsch Synthesis
    Employment post graduation: BASF Chemical Corporation
23. Yoonkook Park, Ph.D. 2001
    Dissertation Title: Phase Behavior and Particle Formation of Polymers in Supercritical Fluid Solvents
    Employment post graduation: Assistant Professor of Chemical Engineering, Hongik University
24. Todd M. Martin, Ph.D. 2000
    Dissertation Title: Phase Behavior and Particle Formation of Polymers in Supercritical Fluid Solvents
    Employment post graduation: Environmental Protection Agency
25. Jason B. Thompson, Ph.D. 2000
    Dissertation Title: Cosolvent and Cosurfactant Effects on Reverse Micelles in Supercritical Fluids

Employment post graduation: UAB Medical School and Cardiology Fellow at Johns Hopkins U.

26. Joanna P. Cason, M.S. 2000
    Thesis Title: Metallic Nanoparticle Production in Reverse Micelles in Liquids and Supercritical Fluids
    Employment post graduation: Savannah River Site – Department of Energy

27. Kedar Khambaswadkar, M.S. 2000
    Thesis Title: Production and Growth of Silver Nanoparticles Within Reverse Micelles in Liquids and Supercritical Fluids
    Employment post graduation: TenFold Corporation – Emory MBA

28. J. Todd Reaves, Ph.D. 1999
    Dissertation Title: Chemical Reactivity in Subcritical and Supercritical Fluid Solvents
    Employment post graduation: Ciba Specialty Chemicals

29. Aron T. Griffith, M.S. 1998
    Thesis Title: The Separation and Recovery of Nylon From Carpet Waste
    Employment post graduation: Fina Oil and Chemical Company

30. Ayana A. Lateef, M.S. 1996
    Thesis Title: Polymer Phase Behavior in Supercritical Fluid Mixtures and Applications to Recycling
    Employment post graduation: General Motors - NASA

## GRADUATE STUDENT COMMITTEES

1. Vikrant Dev, Ph.D. 2017
2. Robert Herring, Ph.D. 2014
3. Padma Sundaram, Ph.D. 2014
4. Nourredine Abdoulmoumine, Ph.D. 2014
5. Teng Xu, Ph.D. 2014
6. Yanyan Gong, Ph.D. 2014
7. Courtney Ober, Ph.D. 2013
8. Vishal Salian, Ph.D. 2012
9. Suchithra Gopakumar, Ph.D. 2012
10. Charles White, Ph.D. 2011
11. Naveed Ansari, Ph.D. 2011
12. Li Kang, Ph.D. 2011
13. Adam Byrd, Ph.D. 2011
14. Wei Yuan, Ph.D. 2011
15. Charles White, M.S. 2011
16. Sandeep Kumar, Ph.D. 2010
17. Sachin Nair, Ph.D. 2010
18. Nishanth G. Chemmangattuvalappil, Ph.D. 2010
19. Melinda Hemmingway, Ph.D. 2010
20. Aimee Poda, Ph.D. 2010
21. Ganesh Sanganwar, Ph.D. 2010
22. Norman E. Sammons Jr., Ph.D. 2009
23. Adam Anderson, Ph.D. 2009
24. Kimberly R. Noss, Ph.D. 2009
25. Yanli Chen, M.S. 2009
26. Jeffrey R. Seay, Ph.D. 2008
27. Rajesh Gupta, Ph.D. 2008
28. Gregory Donath, Ph.D. 2008
29. Robert Payne, Ph.D. 2008
30. Ranjeeth Kalluri, Ph.D. 2008
31. Asa Vaughan, Ph.D. 2008
32. Feng He, Ph.D. 2006
33. Shanthi Murali, M.S. 2008
34. Siddarth Venkatest, Ph.D. 2008
35. Nick Irvin, MChE 2007
36. Hongyun Yang, Ph.D. 2007
37. Chan-kyu Kang, M.S. 2007
38. Maryim Ali, M.S. 2007
39. Fadwa T. Eljack, Ph.D. 2007
40. Hatem Harraz, M.S. 2007
41. Kristen Wilde, MChE 2007
42. Matthew Bernhart, M.S. 2007
43. Zach Emerson, Ph.D. 2007
44. Byung Um, Ph.D. 2007
45. Cameron Ray, M.S. 2006
46. Zahra Colley, M.S. 2006
47. Roy Lightle, M.S. 2006
48. Kristin H. McGlocklin, M.S. 2006
49. Aridan Basu Sarkar, Ph.D. 2006
50. Kayoko Ono, M.S. 2006
51. Jeff Snelling, Ph.D. 2006
52. David Joiner, M.S. 2005
53. Ranjit Thakur, Ph.D. 2005
54. Mukund Karanjikar, Ph.D. 2005
55. Kristie Bethune, Ph.D. 2005
56. Luckner Jean, M.S. 2005
57. Amol Thote, Ph.D. 2005
58. Kellie Wade, M.S. 2005
59. Andrew P. Queen, M.S. 2005
60. Tracey L. Mole, Ph.D. 2005
61. Bong-Kyu Chang, Ph.D. 2004
62. Pradeep Prasad, Ph.D. 2004
63. Zhongxiang Chen, Ph.D. 2004
64. Patrick Nguyen, M.S. 2004
65. Aaron Mayo, Ph.D. (U. Nebraska), 2004
66. Parag Garhyan, Ph.D. 2004
67. John Hall, M.S. 2004
68. Brian Wells, M.S. 2004
69. Amendi Stephens, M.S. 2003
70. Jeff Fowler, M.S. 2003
71. Anthony Martin, M.S. 2003
72. Raghu Viswanathan, M.S. 2003
73. Ping Liu, M.S. 2003
74. Zach Emerson, M.S. 2003
75. Tonia Burk, Ph.D. 2002
76. Lakeshie Williams, M.S. 2002
77. Ian M. Glasgow, M.S.2002
78. Eva Lovelady, M.S. 2002
79. Delphine Dubois, M.S. 2002
80. Pratibash Chattopadhay, Ph.D. 2002
81. Tanya Northcutt, Ph.D. 2001
82. Tyson Myers, M.S. 2001
83. Muthukamaran Poongunran, Ph.D. 2001
84. Phil Woodrow, Ph.D. 2001
85. Bahy Noureldin, Ph.D. 2001
86. Key Warren, M.S. 2001
87. Jerry Willing, Ph.D. 2001
88. Gautham Parthasarathy, Ph.D. 2000
89. Mark Shelley III, Ph.D. 2000
90. Andrew Davies, M.S. 2000
91. Kathryn Yang, M.S. 2000
92. Bogdan Ciocirlan, M.S. 2000
93. Murali Gopalkrishnan, Ph.D. 2000
94. Jiwei Chen, Ph.D. 2000
95. Sabitha Roy, Ph.D. 1999
96. Joel Camann, M.S. 1999
97. Eric Anderson, M.S. 1999
98. Ray Brinkley, M.S. 1998
99. Sushil Meda, M.S. 1998
100. Alec Dobson, M.S. 1998
101. Jamie Seymour, M.S. 1998
102. Hyunku Joo, Ph.D. 1997
103. Chris Soileau, M.S. 1997
104. John Kress, Ph.D. 1997
105. Harish Wagray, Ph.D. 1997
106. Stevanus Yani, M.S. 1997
107. Yang Zhang, Ph.D. 1997
108. Felicia Belyeu, M.S. 1996
109. Anthony Akles, M.S. 1996
110. Michael Sauer, M.S. 1995

## SELECTED GRADUATE STUDENT AWARDS

Throughout Roberts' tenure at Auburn University, his graduate students have been very accomplished and have been recognized with numerous awards.

Examples of student awards and honors include:

- Nine graduate students have won 1st place awards at the AU Graduate Scholars Forum along with several 2nd and 3rd place awards since 2000
- 2016 Best Paper in Catalysis and Reaction Engineering Division, AIChE Annual Meeting – David Roe
- 2014 Outstanding Oral Presentation Award, Auburn University Research Week – Pranav Vengsarkar
- 2013 Outstanding Student Award, Auburn Graduate School – Jennifer Duggan
- 2012 Best Paper at the International Symposium on Supercritical Fluids – Jennifer Duggan
- 2011 AU Graduate School Harry Merriwether Fellowship – Steven Saunders
- 2011 Graduate School Ambassador – Jennifer Duggan
- 2010 Commencement Representative for the Graduate School at AU – Kendall Hurst
- 2009 NDIA Space & Missile Defense Fellowship Award – Kendall Hurst
- 2007 Outstanding Doctoral Student Award, Auburn University – Madhu Anand
- 2006 Outstanding International Graduate Student, Dept. of Chemical Engineering – Madhu Anand
- 2005 Best Scientific Quality Paper Award at Gordon Research Conference – Nimir Elbashir
- 2004 Outstanding Minority Graduate Research Assistant, Auburn University – Christopher Kitchens
- 2002 Best Poster in Advances in Extraction, AIChE Annual Meeting – Nimir Elbashir
- 2001 Best Poster 10th International Symposium on Supercritical Fluid Chromatography, Extraction, & Processing – M. Chandler McLeod
- 2000 Outstanding Graduate Student Award, Auburn University – Joanna Cason

## UNDERGRADUATE RESEARCH STUDENTS MENTORED

Roberts has supervised more than 41 undergraduate researchers in his laboratory and has published several papers and presentations with these students. 19 of these students were women, and 9 were minorities from under-represented groups.

Selected highlights of student achievement:

- 23 publications with undergraduate authors
- One student placed 1st in the AIChE National Poster Competition
- Two students placed 2nd in the AIChE National Paper Competition
- Twelve students placed 1st, 2nd or 3rd in the Southeast Regional AIChE Student Paper Competition
- Roberts has mentored four NSF-REU student fellows
- One REU student took 1st place in the Midwest Regional AIChE Student Paper Competition
- Four of the undergraduate research students from Roberts' lab were awarded the Auburn University Undergraduate Research Fellowship (Sutton, Namikis, Layton, McHenry)
- Five undergraduates (Layton, McHenry, Pathesema, Shulz, Sutton) completed an Honors Thesis under Roberts direction through the Honors College from research in Roberts' group
- Seventeen of Roberts' undergraduate mentees have attended graduate or professional school
- Roberts has hosted four minority undergraduate research students from Tuskegee University

## COURSES TAUGHT

Roberts has taught numerous courses in the chemical engineering curriculum ranging from foundational freshmen/sophomore courses to advanced graduate core and elective classes. He consistently received very high student evaluations (averaging 4.7 out of possible 5.0) and was recognized with several teaching awards. A list of the courses taught by Roberts is given below. Each of these courses was taught numerous times except where otherwise noted.

- ENGR 1110 Introduction to Engineering (co-taught two semesters)
- ENGR 2010 Engineering Thermodynamics
- CHEN 2100 Principles of Chemical Engineering – Material and Energy Balances
- CHEN 2AA0 Chemical Engineering Progress Assessment I
- CHEN 3AA0 Chemical Engineering Progress Assessment II
- CHEN 3370 Chemical Engineering Thermodynamics II – Phase and Reaction Equilibrium
- CHEN 4460 Process Synthesis, Simulation and Optimization (taught one semester)
- CHEN 4860 Chemical Engineering Unit Operations Lab II
- CHEN 4900 Chemical Engineering Independent Study
- CHEN 4980 Chemical Engineering Undergraduate Research
- CHEN 4997 Chemical Engineering Honors Thesis
- CHEN 5650/6650 Hazardous Materials Management and Engineering (co-taught one semester)
- CHEN 6970/7970 Advanced Special Topics in Supercritical Fluid Technology
- CHEN 6970/7970 Advanced Special Topics in High Pressure Thermodynamics
- CHEN 7200 Graduate Chemical Engineering Thermodynamics
- CHEN 7900 Graduate Independent Study
- CHEN 7950 Chemical Engineering Graduate Seminar
- CHEN 7990 Research and Thesis
- CHEN 8990 Research and Dissertation
- SCMH 1010 Concepts of Nanoscience (co-taught two semesters)

# PROFESSIONAL SOCIETY MEMBERSHIPS

- Senior Member – American Institute of Chemical Engineers
- Member – American Chemical Society
- Member – American Society for Engineering Education
- Member – ASEE Engineering Deans Institute

# SERVICE ACTIVITIES

## PROFESSIONAL SERVICE

### *Editorial Responsibilities*

- Editorial Board Member of the journal *Fuel Processing Tech*: an Elsevier publication. 2002 – present
- Editorial Board Member of the journal *Fluid Phase Equilibria*: an Elsevier publication. 2007 – 2015
- Editorial Board Member of the journal *Engineering Education Letters*, 2015 - 2017
- Guest Editor for a Special Issue of the journal *Fuel Processing Technology* on "Advances in C1 Chemistry" that included 19 full-length peer-reviewed articles, 2003

### *External Advisory and Program Reviewer Service*

- Invited to Co-Chair the Committee of Visitors for the National Science Foundation Division of Chemical, Bioengineering, Environmental, and Transport Systems, Spring 2019
- Member of the Technical Advisory Board Subcommittee for the RAPID Manufacturing USA Institute, 2018 - 2019
- Member of the University of Memphis Herff College of Engineering Advisory Council, 2014-present
- Member of the Louisiana State University Department of Chemical Engineering Industry Advisory Committee. 2012-2014
- Member of the External Graduate Review Committee for Department of Chemical & Petroleum Engineering at the University of Pittsburgh (at the invitation of the Dean), 2010
- Member of Advisory Board for Department of Chemical Engineering at the University of Arkansas, 2010–2014
- Served as member of External Review Panel for the Academic Program Review of the Department of Chemical Engineering at Louisiana State University (at the invitation of the LSU Provost), 2009
- Scientific Advisory Board Member – Center for Environmentally Beneficial Catalysis (initially established as an NSF ERC) – University of Kansas, 2007-2013
- Served as a Site Reviewer for the National Science Foundation for a Science and Technology Center (STC) for Environmentally Responsible Solvents and Processes, 2006
- Member of External Advisory Committee for Department of Chemical & Petroleum Engineering at the University of Pittsburgh, 2005-2012
- Served as External Site Reviewer for the Chemical Sciences Program Review, Oak Ridge National Laboratory, Chemical Sciences, Geosciences and Biosciences Division, Department of Energy – Basic Energy Sciences. Program Managers: Paul Maupin, John Miller, Lester Miller and Regina Chung. Oak Ridge, TN, April 11-14, 2004

- Served as Expert Scientist at TAPPI Technical Summit on Biorefinery Pathways, Atlanta, GA, March 28-30, 2004
- Served as a Technical Site Reviewer for the National Science Foundation for a proposed Engineering Research Center (ERC) at the University of Kansas, 2003

### *Professional Affiliations and Leadership Activities*

- Member of the City of Auburn, AL, Industrial Development Board, 2012 – present
- Member of the State of Alabama Engineering Hall of Fame Board of Directors, 2012 - present
- Member of the Engineering Deans Institute, American Soc. of Engineering Education, 2012 - present
- Member of Data Collection Committee, Engineering Deans Council, ASEE, 2016 - present
- Member of the Board of Directors of Modular Carpet Recycling, Inc., a Delaware-based startup company based on patented technology invented by Roberts, and licensed from Auburn University. 2007-2011
- Elected as Co-Chair of the Council for Chemical Research Chemical Engineering Department Heads Meeting in 2007 by nationwide membership, 2007-2012
- Member of the Council for Chemical Research and serve as the voting representative for Auburn University, 2003-2012

### *Conferences, Symposia and Sessions Organized and Chaired*

- Organized and chaired numerous technical symposia at American Chemical Society & American Institute of Chemical Engineers meetings in areas of supercritical fluids, gas expanded liquids, alternative energy, and nanomaterials.
- Served on Organizing Committee for 2018 SEC Academic Conference on Cyber Security, April 2018
- Member of the International Scientific Committee for the 11$^{th}$ International Symposium on Supercritical Fluids, Seoul, South Korea, October, 2015.
- Served on Organizing Committee for 2015 Additive Manufacturing Forum: The Next Industrial Revolution, Auburn, AL, July, 2015
- Member of Advisory Board and Planning Group for SEC Academic Conference on "Impact of the Southeast in the World's Renewable Energy Future," to be held on February 10-12, 2013, at the Hyatt Regency Downtown, Atlanta. The development of this conference is funded ($200K) by the SEC Presidents and Chancelors based on a proposal from the Planning Group consisting of Robert A. Scott (UGA), Stacey Patterson (UTK), Christopher Roberts (Auburn) and Tim Anderson (UF). This is the first such proposal funded for a SEC Academic Conference.
- Chaired session on "Synthesis of Nanomaterials" in the Symposium on Synthesis and Architecture of Nanomaterials at the ICMAT 2011 International Conference on Materials for Advancing Technologies, Singapore, June 26-July 1, 2011
- Chaired session on "Semiconductors, Quantum Dots and Interactions with Light," Telluride Summer Research Workshop on Solution Based Synthesis of Nanomaterials and their Organization for Hybrid Device Structures, Telluride, CO, July 18-22, 2011
- Member of the International Scientific Advisory Board of the SuperGreen 2011 Conference – 7$^{th}$ International Conference on Supercritical Fluids, Beijing, China, 2010-2011
- Chaired session on "Materials Synthesis" at the Supergreen 2011 Conference, 7th International Conference on Supercritical Fluids, Beijing, China, August, 2011
- Member of the Organizing Committee for the 10$^{th}$ International Symposium on Supercritical Fluids (ISSF 2012), San Francisco, 2010–present

- Organized ACS symposium with C.L. Kitchens on "Green Synthesis and Materials Processing using Tunable Fluids," Division of Industrial and Engineering Chemistry Research, 240th American Chemical Society National Meeting, Boston, August, 2010
- Co-Chair of Symposium on "Synthesis and Architecture of Nanomaterials" at the ICMAT 2011 International Conference on Materials for Advancing Technologies, Singapore, 2009-2011. This symposium included 11 individual sessions over the course of 5 days
- Co-organized and co-chaired annual Chemical Engineering Department Chairs/Heads Session at the Council for Chemical Research Annual Meeting with M. McCready of Notre Dame, 2007–present
- Chaired session on "Materials Synthesis and Processing with Supercritical Fluids 1," AIChE Annual Meeting, Cincinnati, OH, October 30-November 4, 2005
- Chaired session on "Microelectronics and Nanomaterials" at the 7th International Symposium on Supercritical Fluids (ISSF 2005), Orlando, FL, 2005
- Member of the International Scientific Committee of the 7th International Symposium on Supercritical Fluids (ISSF 2005), Orlando, 2004-2005
- Organized ACS symposium with R.B. Gupta on "Materials Synthesis and Processing in Supercritical Fluids, 227th American Chemical Society National Meeting, Anaheim, March, 2004
- Chaired session on "Materials Synthesis and Processing in Supercritical Fluids" at the 227th American Chemical Society National Meeting, Anaheim, CA, March 29, 2004
- Chaired session on "Advances in Structure, Function and Stability in Pharmaceuticals and Biologics I," AIChE Annual Meeting, San Francisco, November, 2003
- Chaired session on "Advances in Structure, Function and Stability in Pharmaceuticals and Biologics II," AIChE Annual Meeting, San Francisco, November, 2003
- Chaired session on "Polymerization and Polymer Processing with Supercritical Fluids," AIChE Annual Meeting, San Francisco, November, 2003
- Chaired session on "Polymerization and Polymer Processing with Supercritical Fluids II," AIChE Annual Meeting, San Francisco, CA, November 19, 2003
- Session Participant on "Frontiers in Chemical Engineering Education" at AIChE Annual Meeting, San Francisco, CA, November 16, 2003
- Organized Symposium on "Advances in C1 Chemistry", Fuel Chemistry Division, 223rd ACS National Meeting, Orlando, April 7-11, 2002. (Co-Organizer Daniel Resasco, University of Oklahoma) (35 papers in 4 sessions)
- Chaired session on "Pollution Prevention Using Supercritical Fluids" at the AICHE Annual Meeting, Reno, 2001, Nov 7, 2001
- Chaired session on "Materials Processing with Supercritical Fluids," AICHE Annual Meeting, Reno, 2001, Nov 5, 2001
- Chaired two sessions on "Ipatieff Symposium Honoring J. F. Brennecke," ACS National Meeting, San Diego, 2001, IEC Division, April 4, 2001
- Chaired session on "Reactions in Supercritical Fluids" at The Fifth International Symposium on Supercritical Fluids, ISSF 2000, Atlanta, 2000
- Chaired session on "Materials Processing in Supercritical Fluids II," AIChE Annual Meeting, Los Angeles, 2000
- Chaired session on "Thermodynamic and Transport Properties: High Pressure Equilibria," AIChE Spring Meeting, Atlanta, 2000
- Member of the Working Committee for the 5th International Symposium on Supercritical Fluids (ISSF 2000), Atlanta, 1999-2000

- Chaired session on "Thermodynamic and Transport Properties: High Pressure Equilibria," AIChE Spring Meeting, Houston, 1999
- Chaired session on “Applications and Processing in Supercritical Fluids,” AIChE Annual Meeting, Miami,1998
- Chaired session on “Thermodynamic and Transport Properties: Solvent Substitutes,” AIChE Spring Meeting, New Orleans, 1998
- Chaired session on “Reactions in Supercritical Fluids,” AIChE Annual Meeting, Los Angeles, 1997
- Chaired session on “Thermodynamic and Transport Properties of Supercritical Fluids” AIChE Annual Meeting, Chicago, 1996
- Chaired session on “Waste Treatment and Resourse Recovery with Dense Fluids,” American Chemical Society - Emerging Technologies in Hazardous Waste Management Conference in Birmingham, 1996

### *Other Professional Service*

- Invited panelist at the Engineering Development Forum hosted by the University of Washington, 2021
- Invited panelist in the 2011 American Institute of Chemical Engineers Department Heads Forum on “Best Practices by Department Chairs.” Session Chair: Said AbuBakr. Topics: Engaging Department Advisory Councils and Mentoring New Faculty.
- Provided invited talk in the 2009 American Institute of Chemical Engineers Young Faculty Forum on "Insights into Engineering a Successful Academic Career," 2009
- Judge for Breen Graduate Fellowships for the American Chemical Society - Green Chemistry Institute, 2008-2009
- Provided invited workshop in the 2008 American Institute of Chemical Engineers Department Heads Forum on “Building Relations with Alumni and Fundraising.” 2008
- Provided invited workshop at the Southeast Regional Chemical Engineering Department Heads Meeting on “Designing Effective Assessment Exams,” 2007
- Elected Chair of Area 1f (High Pressure Engineering) of the American Institute of Chemical Engineers, 2001-2003.
- Elected Chair of Programming Committee of Area 1f (High Pressure) for the American Institute of Chemical Engineers (AIChE) National Meeting held in Dallas, 1999. Eight separate sessions were organized in the area of high pressure.
- Member of the Programming Committee for Area 1f (High Pressure Engineering) for American Institute of Chemical Engineers, 1994-2003.
- Paper Judge for the Student Poster Contest (Graduate and Undergraduate) at two AICHE Annual Meetings, 1994 and 1995.
- External Examiner for Ph.D. dissertations at University of New South Wales, the National Chemical Laboratory in Pune, India and the National University of Singapore.

## AUBURN UNIVERSITY AND COLLEGE OF ENGINEERING SERVICE

- Member of the University Budget-Advisory Committee, 2021
- Chair of the Harbert College of Business Dean Search Committee at Auburn University, 2018
- Member of the Steering Committee of the AU Internationalization Strategic Planning Committee, 2019
- Member of the Auburn Athletics Strategic Advisory Committee, 2017
- Member of the Auburn University Central Units Allocation Committee, 2017 - 2020

- Member of the Auburn University President Search Advisory Committee, 2016-2017
- Member of the Planning Committee for the Jay and Susie Gogue Performing Arts Center, Auburn University, 2015 – 2017
- Member of the Selection Committee for Auburn University Creative Research Award, 2015
- Senator, Auburn University Senate, 2013-2016 and 2021
- Member of 'University College' Recommendation and Review Committee, 2013
- Member of the Auburn University eLearning Committee, 2013-2015
- Chair of the College of Science and Mathematics Dean Search Committee, 2012
- Member of the Auburn University Council for Energy and Environment Research, 2012 – 2013.
- Member of the Auburn Research and Technology Foundation Board of Directors, 2012 – present
- Member of the Auburn University Executive Facilities Committee, 2012 – 2017
- Vice-Chair of the Board of Directors of the National Center for Asphalt Technology, 2012 – present
- Advisory Board Member of the Auburn University Food Systems Initiative, 2012-2015
- Board Member of the Auburn University Research Initiative in Cancer, 2012-2014
- Member of Auburn University Strategic Plan Research Implementation Team, 2012-2013
- Served on Search Committee for the Director of Engineering Network Services, 2011-2012
- Member of the Auburn University Provost Search Committee, 2011-2012
- Served as Chair of the Auburn University Energy and Environment Task Force, 2010-21012
- Appointed by AU President to serve on University Budget Advisory Committee, 2009-2014
- Served on AU Search Committee for Director of Academic Sustainability Programs, 2010
- Served on Auburn University Energy and Environment Review Committee, 2009-2010
- Member of the AU Research Instrumentation Facility Advisory Committee, 2010-2013
- Chair of the AU Research Electronics Support Facility (RESF) Advisory Committee , 2010-2012
- Panelist for the Auburn University Chairs Council session on "Legal Issues for Chairs," 2010
- Member of Auburn University Health Sciences Initiative Planning Group and Task Force. Chair of Group C in the Health Sciences Initiative on "Development of Drugs and Devices," 2010
- Served on the Academic Program Review Committee for Department of Chemistry at AU, 2009
- Served on search committee for Associate Dean of the Graduate School at Auburn University, 2009
- Served on search committee for Associate Dean for Research, Harrison School of Pharmacy, Auburn University, 2009
- Supported V. Ortiz (Chemistry) in the establishment of an Auburn University chapter of the National Organization of Black Chemists and Chemical Engineers (NOBCChE) in 2008. Hosted recruiting events at the NOBCChE National meetings in St. Louis in 2009 and Atlanta in 2010.
- Member of the Auburn University Chemical Reporting Group, 2008
- Member of the Auburn University Vice President for Research Search Committee, 2008
- Led effort with C. McQueen to create a Pharmaceutical Engineering Initiative between the Ginn College of Engineering and the Harrison School of Pharmacy. 2008-2012
- Founding Member of the AU Center for Bioenergy and Bioproducts, 2007-present

- Served as external administrator in a post-tenure review case in another department on campus
- Delivered sessions in the Auburn University Summer Bridge Program on "Science and engineering solutions to 10 issues facing humanity," 2007-2009
- Served on Auburn University Bioenergy Committee, 2006-2009
- Chair of Auburn University Faculty/Staff Campaign, 2006
- Member of Ginn College of Engineering Academic Assessment Committee, 2004-2008
- Member of the Board of Directors of the Auburn Pulp and Paper Foundation (APPF). APPF consists of 55 member companies that contribute to the mission of the Alabama Center for Paper and Bioresource Engineering, including the generation of significant development funds for scholarships, 2003-2012
- Served on selection committees for professorships in the Ginn College of Engineering, 2002-2012
- Chair of the Ross Hall Renovation Committee, 2002-2007. This was a ~$14 million project to renovate Ross Hall to provide office, classroom and laboratory space. Responsibilities included coordinating activities with Chemical Engineering, Mechanical Engineering, the College of Engineering, University Facilities Division, as well as the architectural firm.
- College of Engineering Representative to the AU Honors Council Advisory Committee, 2000-2002
- Member of the Auburn University Biogrants Review Committee, 2000 – 2002
- Dept. Representative to the College of Eng. ABET and SACS Accreditation Committee, 1998-2002
- Chair of College of Engineering Teaching Award Committee, 1998
- Member of the College of Engineering PhD Presidential Graduate Fellowships Committee, 1998
- Member of the initial Steering Committee of the Auburn University Undergraduate Competitive Research Fellowship Opportunities Program, 1998-2002. This program was established by the Vice-President for Research to encourage undergraduate students to participate actively in research.

## DEPARTMENT OF CHEMICAL ENGINEERING SERVICE

- Member of the Department of Chemical Engineering Executive Committee, 2002-2012
- Responsible for the Department of Chemical Engineering's ABET EC2000 and SACS accreditation and associated activities, 2000 – present. Successfully led the department through two ABET accreditation reviews with only strengths noted and no shortcomings noted.
- Member of the department's Curriculum Accreditation Planning and Action Committee (CAPAC). CAPAC oversees and coordinates all curriculum development and assessment activities to achieve and maintain accreditation, and ensures high-quality education for our students.
- Worked with B. Tatarchuk to create the Basore Distinguished Lecture and Visitation Program. This Basore program is designed to bring members of the National Academy of Engineering to the Auburn Department of Chemical Engineering to provide a technical lecture and to provide insight into further program improvement. The Basore program has hosted 17 members of the National Academy of Engineering from top-flight institutions, 2009-2012
- Led the development of the Department of Chemical Engineering Bylaws, 2002
- Coordinated and led seven departmental faculty retreats that covered ABET activities, undergraduate, graduate, research and administrative issues, 2003-2012
- Coordinated and facilitated two meetings a year of the Auburn Department of Chemical Engineering Alumni Advisory Council, 2003-2012
- Department Seminar Coordinator, 1995-1996 and 2007-2009

- Served as outside reviewer for NSF REU Site: 2006, 2007, 2008
- Chair or co-chair of Chemical Engineering Graduate Recruiting Committee, 1994 – 2001
- Graduate Program Officer for Department of Chemical Engineering, 1995 – 1997
- Member of Department of Chemical Engineering Peer Review of Teaching Committee, 1999 – 2001
- Chair of the Minority Introduction to Engineering (MITE) program committee, 1995-1996
- Chair of Department of Chemical Engineering E-day Activities, 1995 - 1996. E-day is an annual open house that invites 3000 high school and middle school students to learn about our programs.
- Departmental coordinator for the College of Engineering TIGERS (Teams and Individuals Guided by Engineering Resources) Summer Camps, 2004, 2005, 2006. The Engineering TIGERs camps are resident summer camps designed to expose students in grades 8-11 to the world of engineering.