

Sheryl A. Tucker, PhD

Over twenty years of increasingly complex, diverse and sophisticated leadership responsibilities and experiences in interdisciplinary higher education and government settings

Education

Postdoc	Duke University, Chemistry (1994–1996)
PhD	University of North Texas, Chemistry (1994)
BS	Kent State University, Chemistry (1990)
Certificate	The George Washington University Law School Contracting Officer Technical Representative Training Program (2010)
Certificate	University of Missouri School of Law Mediation Training (2009)
Certificate	HERS Bryn Mawr Summer Institute (2008)

Professional Experience

Oklahoma State University (OSU)

Associate Provost (1/2012–present) Academic Affairs; Dean (8/2011–present) Graduate College; Interim Vice President for Research and Technology Transfer (1/2014–6/2015) Division of Research; Professor (8/2011–present) Department of Chemistry; Full Member (8/2011–present) Graduate Faculty

National Science Foundation (NSF)

Program Director and Visiting Scientist, Graduate Research Fellowship Program (9/2009–7/2011) Division of Graduate Education

University of Missouri (MU) – on development leave from 9/2009–7/2011 to serve at NSF Associate Dean (10/2007–7/2011) Graduate School; Member (8/1996–7/2011) Doctoral and Graduate Faculty; Adjunct Professor (8/2011–12/2012), Professor (9/2008–7/2011), Associate Chair (1/2005–9/2007), Associate Professor (9/2002–8/2008), Assistant Professor (8/1996–8/2002) Department of Chemistry; Affiliated Faculty (9/2006–7/2011) Department of Women's and Gender Studies

Select Awards and Honors

- Conference of Southern Graduate Schools, Elected Executive Committee Member (2013–2016)
- Phi Beta Kappa Society, Gamma of Oklahoma Chapter, Charter Member (2013–present)
- Phi Beta Delta Honor Society for International Scholars, Epsilon Upsilon Chapter, Honorary Initiate (2013–present)
- Honorary Assistant Coach, OSU Football (2012)
- Phi Kappa Phi, OSU Chapter, Honorary Initiate (2011)
- NSF Director's Award for Collaborative Integration – Financial and Funding Models for the Graduate Research Fellowship Program Team (2011)
- NSF Employee Performance Awards (2010; 2011)
- Mizzou Inclusive Excellence Award, Chancellor's Diversity Initiative (2010)
- Distinguished Lecturer, Sigma Xi – The Scientific Research Society (2010–2012)
- *The Lure of Informal Science Education* Feature, *Chemical and Engineering News* (2008)
- Kent State University Honors College 75th Anniversary Honoree (2008)
- MU Graduate Faculty Mentor Award, MU Graduate School (2007)
- Distinguished Alumna Award, Kent State University Honors College Alumni Chapter (2007)
- American Chemical Society Stanley C. Israel Regional Award for Advancing Diversity in the

- Chemical Sciences: Midwest Regional Meeting Recipient (2006)
- Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring, administered on behalf of the White House by the National Science Foundation (2005)
 - Quality Recognition Award, Girl Scouts of the USA, awarded to the Girl Scouts – Heart of Missouri Council for the *Magic of Chemistry*[™] Program (2003)
 - Cottrell Scholar Award, Research Corporation (1999)
 - Faculty Early Career Development Award, National Science Foundation (1998)
 - Young Alumni Achievement Award, Kent State University Alumni Association (1996)
 - American Chemical Society, Analytical Division Graduate Fellowship (1993–1994)
 - National Science Foundation Doctoral Fellowship (1990–1993)
 - Ohio Board of Regents Scholarship (1986–1990)

Administrative Responsibilities/Accomplishments – Oklahoma State University (OSU)

Founded in 1890, OSU is a public land-grant institution with Carnegie classifications of comprehensive doctoral, high research activity and community engagement. With nearly 26,000 students on the main campus, OSU is the Flagship institution in the OSU System with a \$1B budget. OSU offers over 200 undergraduate majors and 140 graduate degree options in 12 colleges/centers: College of Agricultural Sciences and Natural Resources; College of Arts and Sciences; Spears School of Business; College of Education; College of Engineering, Architecture and Technology; Graduate College; Center for Health Sciences; Honors College; College of Human Sciences; University College; and Center for Veterinary Health Sciences.

Associate Provost

As an integral member of Provost Staff, the Associate Provost serves as a primary advisor to the Provost concerning academic, budgetary, personnel, management and organizational matters and provides additional support through attendance at the Oklahoma A&M Colleges Board of Regents meetings. As one of three members involved in weekly staff meetings with the Provost, the Associate Provost actively participates in strategic planning and key decision making on undergraduate and graduate matters and retention, promotion and tenure decisions.

- Initiate and participate in university-wide initiatives (e.g., Evaluation of Instruction Task Force and the Online Education Steering Committee), resulting in current knowledge of higher education issues and a unique understanding of the academic and student affairs enterprise at the undergraduate and graduate levels
- Chaired various task forces and administrative searches (e.g., Vice President for Research and Business Dean), resulting in continued forward momentum for the University community
- Write formal evaluations of faculty dossiers submitted for retention, promotion and/or tenure decisions, resulting the Provost receiving additional advice and counsel
- Provide oversight for the Center for Sovereign Nations, ensuring success of this new initiative
- Facilitated a partnership of competing efforts for a Master of Public Health (MPH) degree program, resulting in a unified collaboration across all disciplinary colleges
- Partnered with the Office Academic Affairs and the Institute for Teaching and Learning Excellence on professional development for graduate instructors, resulting in an annual GTA training opportunities to improve instructional capacity and enhance undergraduate retention
- Revamped the Provost Interdisciplinary Grants Program (\$500K/year), resulting in a merit review system that funded several faculty projects that garnered new external funds

- Created the new President's Cup Competition infrastructure, resulting in monetary recognition of creative interdisciplinarity contributions by teams to OSU's mission
- Initiated the updating of the University Research Misconduct Policy, resulting in policies that addresses all campus populations appropriately
- Meet routinely with the associate deans for research and graduate studies, ensuring a comprehensive approach to the graduate education environment and experience
- Responsible for the selection of the endowed Masonic Chair for Interdisciplinary Research Relating to Men's Studies, ensuring the integrity of the university-wide selection process

Dean of the Graduate College

The College facilitates the success of 4,500 diverse graduate students in 45 doctoral/specialist, 75 master's and 20 graduate certificate degree programs under the guidance of 1,000 Graduate Faculty and 100 graduate program coordinators and staff across three campuses (Stillwater, Tulsa and Center for Health Sciences), resulting in a record breaking 1,500 graduate degrees awarded annually. With over 25 unit members, the Dean is responsible for a \$4M budget and the direct stewardship of over \$20M in graduate student benefits (tuition waivers and health insurance), including 1,800 GTA/GRAs with a \$32M payroll. The Dean is the chief graduate education academic officer with academic, administrative, fiscal and student affairs responsibilities, working in collaboration with the administration, colleges, degree programs and Graduate Council to ensuring the integrity and quality of the graduate programs.

- Overhauled the entire graduate student financial infrastructure through a shared governance and strategic planning approach, resulting in enhanced time-to-degree and degree completion opportunities through improved stipends (\$2M new investment to date), fiscally responsible \$18M tuition waiver program, IRS-compliant GTA/GRA employment definitions, and more inclusive and enabling program (0.50 FTE appointments)
- Addressed expensive, inefficient, outdated paper processes, resulting in a new web-based application system, new online Plan of Study w/e-signatures, etc. that are more accessible
- Worked to establish relationships with students, faculty, staff, administrators and alums, resulting in a view of the Graduate College as a transparent, accessible partner
- Developed an inaugural fundraising initiative w/OSU Foundation, resulting in the first College corporate sponsorship, a \$500K endowment estate gift and an Annual Fund campaign
- Sought approval from the US Department of Education for federal financial aid eligibility for graduate certificates in collaboration with OSU Financial Aid, resulting in approval that ensures broader access to and participation in graduate education
- Promoted and assisted with new degree program development (e.g., Oklahoma's first professional science master's degree; new 60-hour minimum doctoral degrees; 2 PhD, 12 master's and 10 graduate certificate degrees), ensuring OSU stays current in graduate education
- Reorganized and renovated the College to address personnel and space concerns, resulting in a productive, service-oriented staff and functional, safe space for serving students and faculty
- Developed a multipronged communication plan (e.g., *Monday Memo*; alumni e-newsletter), facilitating engagement and participation with a thriving, connected College
- Added student (e.g., Honorary Commencement Marshals) and faculty and staff (e.g., Graduate Program Coordinator) awards, recognizing outstanding achievements in graduate education
- Created professional development microcredential opportunities for students (e.g. dissertation writing workshops, three-minute competition to improve communication skills) and staff (e.g., profession conference attendance), resulting in a climate that supports life-long learning

- Updated recruiting, financial and academic support structures, ensuring we recruit, matriculate and graduate a diverse student population
- Provide scholarly context on graduate education practices, leading to new College mission, vision and best practice statements, and degree completion and time-to-degree reports
- Initiated a pilot program to provide paid leave to male and female graduate teaching or research assistants who experience the birth or adoption of a child to enhance degree completion
- Address and mediate graduate student issues in conjunction with Graduate Council and the Graduate and Professional Student Government Association, resulting in an improved climate
- Oversee all interdisciplinary degree programs under the College (e.g., International Studies; MPH), ensuring effective leadership is in place to properly administer and grow the programs
- Continually evaluating and addressing policies and procedures, resulting in a supportive graduate education environment that is compliant with federal, state and local regulations
- Provide insight, data and evaluation on graduate academic degree reviews with Graduate Council, ensuring the quality and the future viability of graduate programs
- Meet routinely with Graduate Council, graduate program coordinators and staff, and the associate deans for research and graduate studies of the disciplinary colleges, ensuring a comprehensive approach to the graduate education enterprise
- Actively originate, participate in and stay abreast of graduate education issues locally, regionally, nationally and internationally, ensuring effective advocacy for graduate education issues internally and externally (e.g., hosting *Graduate Education Week*)
- Served on various taskforces (e.g., online education) and administrative searches (e.g., provost and senior vice president), ensuring graduate education has a strong campus voice
- Hired several employees from hourly staff to graduate research assistants to program directors to associate deans, resulting from successful advocacy for additional positions

Interim Vice President for Research and Technology Transfer (VPRTT)

With over \$180M in research expenditures, the VPRTT is a direct report to the President, serves as the advisor to him and the University community concerning research and is responsible for all research and technology transfer administration. With nearly 50 staff and a budget of \$15M, units reporting directly to the VPRTT are Research Administration; High Performance Computing Center (HPCC); National Energy Solutions Institute (NESI); OSU Experimental Program to Stimulate Competitive Research (EPSCoR); Research Communications; Technology Development Center; University Center for Proposal Development; University Research Compliance; University Research Services; Henry Bellmon Research Center (interdisciplinary building); and numerous research facilities and spaces.

- Strategically and collaboratively elevated the visibility of and discussions about research with central administration and faculty, resulting in restructuring (e.g., OSU Research Foundation)
- Created a collaborative funding model between colleges and central administration, resulting in \$10M for a new animal resources building to address a mission critical research need
- Initiated corporate engagement strategy conversations with Academic Affairs, OSU Foundation and President's Office, resulting in a new Office of Corporate Engagement (suspended search due to budget constraints)
- Initiated unprecedented strategic planning conversations about research strengths and priorities, resulting in an understanding of our current portfolio and investments opportunities
- Handled federal relations with the Capitol Hill Consulting Group, resulting in new legislative briefing days, delegation visits and "Orange Papers" describing research priorities

- Stewarded the University’s start-up and cost-share programs, ensuring faculty have necessary resources to be competitive for research grants
- Addressed important research compliance concerns, resulting in significant improvements in relationships amongst various entities, additional personnel (e.g., 2 FTE attending veterinarians and IACUC post-approval monitor) and IACUC/IRB software upgrades
- Responded to the growing animal research resource concerns, resulting in the formation of a working group of stakeholders to determine issues, strategies and future directions
- Restructured the faculty research “start-up” program, resulting in a fiscally sound model that leverages existing funding and addressed a \$2M shortfall each of the last two years
- Initiated “return-on-investment” discussions with the colleges concerning start-up funding, elevating the expectations of how to support faculty success
- Started the first real look at long-term research facilities and infrastructure issues, resulting in an inventory, prioritized list and immediate strategic investment in the HPCC (e.g., 3 FTE)
- Collaborated with the Center for Innovation and Economic Development (CIED) President, facilitating relationships between research and technology transfer for commercialization
- Oversaw numerous programs (e.g., Research Week, Regents Distinguished Research Awards, Research Misconduct, Core Facilities and Facilities Renovation/Development Programs), resulting in research being compliant, supported, sustained and celebrated
- Initiated new international partnerships, resulting new opportunities for OSU researchers
- Initiated routine meetings with Faculty Council Officers and college and library Associate Deans for Research, ensuring a collaborative, transparent, comprehensive research approach
- Served on the CIED (renamed the OSU Research Foundation) and Cowboy Technologies Boards, evaluating and advancing faculty inventions to commercial success
- Appointed to the Oklahoma EPSCoR Advisory Committee (2014-2016) by the Oklahoma State Regents for Higher Education, to the providing strategic direction to EPSCoR
- Provided official evaluations of faculty dossiers submitted for retention, promotion and/or tenure decisions, resulting the Provost receiving additional advice and counsel
- Chaired the VPR Search Committee, resulting a successful search and hire of a new VPR

Administrative Responsibilities/Accomplishments – National Science Foundation (NSF)

NSF is an independent Federal agency created by Congress with the NSF Act of 1950. With an annual budget of over \$7.2B and a “bottom up” approach, NSF provides significant funding for basic research in US universities. Organized with seven directorates and four administrative offices (Director; Inspector General; Biological Sciences; Computer & Information Science & Engineering; Education & Human Resources; Engineering; Geosciences; Mathematical & Physical Sciences; Social, Behavioral & Economic Sciences; Budget, Finance & Award Management; and Information & Resource Management), NSF has a workforce of over 2,000 with over 200 scientists from research institutions on temporary assignment.

Program Director, Graduate Research Fellowship Program (GRFP)

Originating in 1952, NSF GRFP is NSF’s oldest program and the oldest federal fellowship program of its kind. The Program resides in the Division of Graduate Education in the Directorate for Education and Human Resources. With 50,000 fellows since its inception, GRFP has funded prolific science and engineers, such as Nobel Laureates, National Academy of Sciences members and founders of corporations. Garnering over 12,000 applications, 200 institutions with 6,000 new and continuing Fellows were funded from the \$158M FY2011 GRFP budget.

- Led NSF’s agency-wide, Flagship fellowship program (a designated Presidential Priority), ensuring the vitality and diversity of the Nation’s science and engineering workforce
- Worked with and across all research directorates, creating directorate buy in and an understanding and response to national disciplinary and interdisciplinary trends
- Originated and modified policies, ensuring Program aligned with NSF’s strategic mission
- Oversaw the historic GRFP expansion to 2,000 new fellowship offers each year and initiated inclusive strategic planning, leading to a sustainable program
- Administered the fellowship competition, ensuring the integrity of review/award processes
- Oversaw the multimillion dollar GRFP budget, ensuring the appropriate stewardship of taxpayer dollars and compliance with federal regulations
- Supervised program assistants and contractors, resulting in effective program management
- Allocated the \$158M budget that funds 6,000 fellows in 200 institutions, ensuring resources are disbursed in a timely manner under the federal budget process constraints
- Managed 200 institutional awards, ensuring that GRFP institutions received program support
- Handled numerous requests to provide background and draft responses to congressional questions, resulting in the Agency being responsive to our constituents
- Worked with stakeholders and NSF administrative units to overhaul the complex and neglected GRFP funding model, resulting in a sustainable plan for timely resource allocation
- Developed multi-year GRFP financial projections and \$500M budget model, ensuring the stewardship of federal funds and fiscal solvency for future competitions (still in use today)
- Initiated new Program elements, resulting in the global research and professional development opportunities for fellows
- Worked with NSF administrative units and offices to develop budgets, resulting the Foundation’s responsiveness to the Office of Management and Budget needs and requests
- Determined GRFP policies, ensuring a fair and unbiased competition for all applicants and awards that align with the strategic mission of NSF and national priorities
- Performed program outreach to diverse student audiences, resulting in more competitive student applications from underrepresented groups
- Initiated new post-award training, resulting in fellows and coordinating officials fully understanding GRFP policies
- Revamped annual activity reports, resulting in alignment with Program assessment needs

Administrative Responsibilities/Accomplishments – University of Missouri-Columbia (MU)

Founded in 1839, MU is an Association of American Universities, public land-grant institution with Carnegie classifications of comprehensive doctoral, very high research activity and community engagement. With over 35,000 students, MU is the Flagship institution in the University of Missouri System with a \$2.1B budget and 14 primary schools and colleges: Agriculture, Food and Natural Resources; Arts and Science; Business; Education; Engineering; Graduate School; Health Professions; Human Environmental Science; Journalism; Law; Medicine; Nursing; Public Affairs and Veterinary Medicine.

Associate Dean, Graduate School

With 7,200 graduate/professional students at the time, MU had a Graduate School Division budget of \$37M (including fee waivers), 65 doctoral programs, 100 master’s programs, 6 education specialist programs and 34 graduate certificates.

- Managed the Graduate School's entire academic-affairs portfolio, ensuring the integrity and quality of the graduate programs
- Worked closely with faculty, campus and system staff and administrators, on academic affairs issues (initiation, review and approval), resulting in new degree programs, emphasis areas, minors and graduate certificates – more than doubling the certificates offerings
- Monitored and resolved policy issues, such as federal financial aid eligibility for graduate certificates, ensuring access to and participation in graduate education
- Served as a Steering Board member of the MU Informatics Institute (new PhD program), promoting and supporting innovative interdisciplinary initiatives
- Built strong, inclusive faculty, staff, student and alumni relationships and provide service-oriented administrative support to all Campus and System sectors, resulting in excellent collaborations that facilitate the advancement of the Graduate School and University missions
- Identified outdated procedural issues, resulting in process modernization, such as electronic review of course proposals via Blackboard
- Served as the liaison to the Graduate Faculty Senate, resulting in their informed decision making and adoption of student- and faculty-friendly policies
- Initiated and participated in *Graduate Education Week* activities, resulting in a better public understanding about the importance of higher education and graduate education in particular
- Oversaw graduate and doctoral faculty certifications, ensuring integrity of graduate programs
- Worked closely with the faculty, staff and Registrar's Office in approving and implementing curriculum changes, ensuring the integrity of the course offerings
- Improved the workplace efficiency, allowing staff to better handled the increased workload, as more and more tasks are performed at the unit level
- Directed the Office of Postdoctoral Education with 230 scholars and resolved diverse issues related to the Office creation, resulting in a scholar monitoring system, a revamped hiring process/promotion of scholars into career positions and movement toward national norms
- Directed *PhD Completion Project* initiatives, leading to improved doctoral student retention
- Chaired the Mizzou ADVANCE Mentoring Program, serving faculty in 17 STEM departments across 3 colleges, promoting professional development for faculty members, resulting in a successful pilot program replicated for faculty in 9 humanities departments
- Served on the Mizzou ADVANCE Steering Board and Advisory Council, leading to a more diverse workforce and an improved campus climate for faculty

Associate Chair, Department of Chemistry

- Served as advisor to the Department Chair concerning academic, budgetary, personnel, management and organizational matters, resulting in enhanced resource allocation, additional faculty hiring with spousal accommodation and strategic planning
- Managed the Teaching Staff budget (\$650K), leading to the effective assignment of departmental teaching assistants
- Recognized the need for a laboratory support position and made a convincing case to colleagues and chair, resulting in the creation of a new position in 2004
- Coordinated the Department's National Research Council's 2006 Assessment of Doctorate Research Programs, leading to 100% faculty participation and inclusion in the rankings
- Reorganized the office staff, resulting in a realignment of responsibilities with positions

- Oversaw doctoral faculty certifications of 19 faculty members, ensuring the quality of the graduate program and doctoral student advising
- Coordinated attendance of alums at departmental events, developing long-term partnerships
- Served on the Department External Review Committee, determining and compiling necessary data for initial report and departmental response, resulting a successful program review
- Facilitated and promoted the Department's participation in community outreach events, such as a Physics-Chemistry Open House, enhancing the Department's visibility in the community

Director of Graduate Studies (DGS), Department of Chemistry

- Oversaw all aspects of the Department's Graduate Program of 100 students from supervising the administrative assistant to serving as the departmental liaison to the Graduate School, resulting in a competitive program that garnered internal and external recognition
- Managed endowments of \$2.5M that provided graduate student scholarships and awards, leading to their use for effective recruiting and recognition
- Authored the departmental Graduate Student Handbook and expanded orientation coverage, such as formalized research-mentor selection, bringing the Department in line with best practices in graduate education
- Instituted annual graduate student assessment, bringing the Department into compliance with Graduate School regulations and best practices
- Initiated formal practice sessions for the English screening exams, leading to more international students passing the state-mandated Oral Proficiency Tests
- Drafted graduate student offer letters and intellectual property policy, leading to their use as University templates after facilitating unprecedented approval by General Counsel, Office of Research and Office of Technology Management
- Authored successful proposals ("Technical Writing for Chemists" and Supplement Graduate School Fellowships), resulting in the Department receiving the funds to improve student preparedness and to enhance recruiting packages and their use as model proposals
- Served as Graduate School's departmental representative for *PhD Completion Project* site visit, facilitating the University receiving a second round of funding

Professorial Positions, Department of Chemistry

- Founded the Women's STEM Network, resulting in a \$500K NSF ADVANCE PAID grant
- Founded the *Magic of Chemistry*[™] program (nationally recognized and published in *Science*), leading to its adoption throughout the country
- Received a Presidential Award, leading to a coauthoring a position paper for NSF Director
- Mentored 31 undergraduate and 17 graduate researchers, with over 70% from under-represented groups, leading to 16 graduate degrees
- Taught general chemistry, quantitative and instrumental methods of analysis, and graduate seminar and topics in analytical chemistry, providing outstanding and innovative instruction for students, primarily in large enrollment (85-250+) courses

Publications (over 100 peer reviewed in journals, such as Science)

- "Graduate Academic Experience," J.L. Van Delinder and S.A. Tucker, in The Modern Land-Grant University, R.J. Sternberg, Ed., Purdue University Press; West Lafayette, 153-168 (2014)
- "Principles of Good Practice in Dealing with Students in Distress," L. Bird and S.A. Tucker, *GradEdge: Insights on Graduate Education and Research*, Council of Graduate Schools, 3,

May (2014) – invited article

- “Mentoring Women Faculty,” J.M. Hermsen J.S. Litt, J.L. Hart and S.A. Tucker, in Gender and Higher Education, B.J. Bank, Ed., Johns Hopkins University Press; Baltimore, 344-350 (2011) – invited chapter
- “Encapsulation of Acenaphthene within C-Propan-3-ol-pyrogallol[4]arene Dimeric Nanocapsules,” K.K. Kline, D.A. Fowler, S.A. Tucker and J.L. Atwood, *Chem. Eur. J.*, 17, 10848-10851 (2011)
- “Spectroscopic Investigation of Pyrogallol[6]arene Nanocapsules Utilizing Encapsulated Fluorescent Guests,” J.L. Whetstine, K.K. Kline, D.A. Fowler, C.M. Ragan, C. L. Barnes, J.L. Atwood and S.A. Tucker, *New J. Chem.*, 34, 2587-2591 (2010)
- “Spectroscopic Characterization of Core-Based Hyperbranched Poly(ethyleneimine) and Dendritic Poly(propyleneimine) as Selective Uptake Devices,” K.K. Kline and S.A. Tucker, *J. Phys. Chem. A*, 114, 7338–7344 (2010)
- “Spectroscopic Investigations of Core-Based, Randomly Hyperbranched Polymers and Comparison with their Dendrimeric Counterparts,” K.K. Kline and S.A. Tucker, *J. Phys. Chem. A*, 113, 12891-12897 (2009)
- “Capillary Electrophoresis Using Core-Based Hyperbranched Polyethyleneimine (CHPEI) Static-Coated Capillaries,” C. Boonyakong and S.A. Tucker, *J. Sep. Sci.*, 32, 3369–3572 (2009)
- “Encapsulation and Quantification of Multiple Dye Guests in Unmodified Poly(amidoamine) Dendrimers as a Function of Generation,” K.K. Kline, E.J. Morgan, L.K. Norton and S.A. Tucker, *Talanta*, 78, 1489–1491 (2009)
- “Mentoring Tenured Faculty: Rationales and Programs,” J.S. Litt, S.A. Tucker and J.M. Hermsen, *The Department Chair*, 20, 5-7 (2009) – invited article
- “The Pipeline: Igniting Girls’ Interest in Science,” S.A. Tucker, D.L. Hanuscin and C.J. Bearnese, *Science*, 319, 1621–1622 (2008)
- “Fluorescent Phosphinimine as Possible Precursor to an Anionic and Fluorescent Sensor for Tc-99,” L.M. Arrigo, M. Galenas, D.B. Bassil, S.A. Tucker, R. Kannan, K.V. Katti, C.L. Barnes and S.S. Jurisson, *Radiochim. Acta*, 96, 835-444 (2008)
- “Photodynamic Therapy: Basic Principles and Potential Uses for the Veterinary Ophthalmologist,” E.A. Giuliano, J. Ota and S.A. Tucker, *Vet. Ophthalmol.*, 10, 337–343 (2007)
- “Spectroscopic Investigations of ADMA Encapsulated in Pyrogallol[4]arene Nanocapsules,” D.B. Bassil, S.J. Dalgarno, Gareth W. V. Cave, J.L. Atwood and S.A. Tucker, *J. Phys. Chem. B*, 111, 9088–9092 (2007)
- “Application of a Fluorescence Assay for the Quantification of the Photodynamic Agent Photofrin® in Horses,” E.J. Morgan, J.L. Whetstine, E.A. Giuliano and S.A. Tucker, *Appl. Spectrosc.*, 61, 450–454 (2007)
- “Encapsulation and Co-Crystallisation of a Fluorophore with Hexameric Pyrogallol[4]arene Nanocapsules: Structural and Fluorescence Studies,” S.J. Dalgarno, D.B. Bassil, S.A. Tucker and J.L. Atwood, *Angew. Chem. Int. Ed.*, 45, 7019–7022 (2006)
- “Dramatic Solvent and Capping Ligand Effects Directing the Photochemistry of Uranyl(VI) Schiff Base Complexes,” A.E. Vaughn, D.B. Bassil, C.L. Barnes, S.A. Tucker and P.B. Duval, *J. Am. Chem. Soc.*, 128, 10656–10657 (2006)
- “Spectroscopic Characterization of Poly(amidoamine) Dendrimers as Selective Uptake Devices: Phenol Blue Versus Nile Red,” E.J. Morgan, J.M. Rippey and S.A. Tucker, *Appl. Spectrosc.*, 60, 551–559 (2006)

- “Molecular Fluorescence, Phosphorescence, and Chemiluminescence Spectrometry” K.A. Fletcher, S.O. Fakayode, M. Lowry, S.A. Tucker, S.L. Neal, I.W. Kimaru, M.E. McCarroll, G. Patonay, P.B. Oldham, O. Rusin, R.M. Strongin and I.M. Warner, *Anal. Chem.* 78, 4047–4068 (2006) – invited, referred review
- “Mentoring for Science, Technology, Engineering and Mathematics Workforce Development and Lifelong Productivity: Success Across the K Through Grey Continuum,” T. Furman, J.A. Gardella, Jr., D.L. Pagni, A. Puri, C.B. Schrader and S.A. Tucker (in alphabetical order) et al., 2005 PAESMEM Awardees Position Paper for the National Science Foundation (2006)
- “Fluorescent Guest Molecules Report Ordered Inner Phase of Host-Capsules in Solution,” S.J. Dalgarno, S.A. Tucker, D.B. Bassil and J.L. Atwood, *Science*, 309, 2037–2039 (2005)
- “Optimization of Micellar Liquid Chromatographic Separation of Polycyclic Aromatic Hydrocarbons with the Addition of Second Organic Additive,” C. Mao, K.E. McGill and S.A. Tucker, *J. Sep. Sci.*, 27, 991–996 (2004)
- “Micellar Liquid Chromatography of Polycyclic Aromatic Hydrocarbons: Alkylpyridinium Chloride as Mobile Phase Modifier and Selective Fluorescence Quencher,” C. Mao, K.E. McGill and S.A. Tucker, *J. Sep. Sci.*, 26, 1643–1649 (2003)
- “High Performance Liquid Chromatographic Separation of Polycyclic Aromatic Hydrocarbons Using Pyridinium Chloride as a Selective Fluorescence Quencher to Aid Detection,” C. Mao and S.A. Tucker, *J. Chromatogr. A*, 966, 53–61 (2002)
- “Spectrochemical Evaluation of Diisopropylamine as a Selective Fluorescence Quenching Agent of Polycyclic Aromatic Hydrocarbons in Acetonitrile,” C. Mao, C.L. Larson and S.A. Tucker, *Polycyclic Aromat. Compds.*, 22, 99–110 (2002)
- “Spectroscopic Investigations of Poly(Propyleneimine) Dendrimers Using the Solvatochromic Probe Phenol Blue and Comparisons to Poly(Amidoamine) Dendrimers,” D.L. Richter-Egger, A. Tesfai and S.A. Tucker, *Anal. Chem.*, 73, 5743–5751 (2001)
- “Spectrofluorometric Investigations of Polyamido Amine Starburst Dendrimers Using the Solvatochromic Probe Phenol Blue,” D.L. Richter-Egger, J.C. Landry, A. Tesfai and S.A. Tucker, *J. Phys. Chem. A*, 105, 6826–6833 (2001)
- “Intrinsic Fluorescence of Carboxylate Terminated Polyamido Amine Dendrimers” C.L. Larson and S.A. Tucker, *Appl. Spectrosc.*, 55, 679–683 (2001)
- “Spectrochemical Investigations in Molecularly Organized Solvent Media: Evaluation of Pyridinium Chloride as a Selective Fluorescence Quenching Agent of Polycyclic Aromatic Hydrocarbons in Aqueous Carboxylate-Terminated Poly(amido) Amine Dendrimers and Anionic Micelles,” D.A. Wade, C. Mao, A.C. Hollenbeck and S.A. Tucker, *Fresenius’ J. Anal. Chem.*, 369, 378–384 (2001) – invited article
- “Synthesis and Analysis of a Solvatochromic Dye, 1-(*p*-Dimethylaminophenyl)-2-nitroethylene: An Advanced Undergraduate Laboratory Experiment,” D.L. Richter-Egger, A. Tesfai, S.J. Flamm and S.A. Tucker, *J. Chem. Educ.*, 78, 1375–1378 (2001)
- “Spectroscopic Investigations of Polyamido Amine Starburst Dendrimers with Reichardt’s ET-30 Dye,” D.L. Richter-Egger, H. Li, and S.A. Tucker, *Appl. Spectrosc.*, 54, 1151–1156 (2000)
- “Spectrochemical Evaluation of Pyridinium Chloride as a Possible Selective Fluorescence Quenching Agent of Polycyclic Aromatic Hydrocarbons in Water and Neat Acetonitrile,” D.A. Wade and S.A. Tucker, *Talanta*, 53, 571–578 (2000)
- “Spectrochemical Investigations in Dendritic Media: Evaluation of Nitromethane as a Selective Fluorescence Quenching Agent in Aqueous Carboxylate-Terminated Polyamido Amine (PAMAM) Dendrimers,” D.A. Wade, P.A. Torres and S.A. Tucker, *Anal. Chim. Acta*, 397, 17–

- 31 (1999) – invited article
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Presentation and Invited Lecture Synopsis

Over 160 presentations at professional meetings and conferences (e.g., Fellowship Roundtable of the National Academies; Midwest Rural-Urban Girls Collaborative Project Conference; NSF Joint Annual Meeting; Cottrell Scholars Conference; Expanding Your Horizons Conference), professional society meetings (e.g., Council of Graduate Schools; Conference of Southern Graduate Schools, Midwest Association of Graduate Schools, American Association of University Women; American Association for the Advancement of Science; Annual Academic Chairperson Conference; Sigma Xi), scientific conferences (e.g., National and Regional Meetings of the American Chemical Society; Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (PITTCON); Gordon Research Conference on Analytical Chemistry), community groups (e.g., Kiwanis Club) and higher education institutions in the US, China, Kuwait, Mexico, Thailand and Vietnam.

Funding Synopsis

Current Proposals

- National Science Foundation: ADVANCE Institutional Transformation (IT) Program – \$3,789,001 (Co-PI)
OSU ADVANCE IT: Pathways to Faculty Excellence (2016–2021); under review
- National Science Foundation: Research Traineeship Program (NRT) – \$2,992,183 (Co-PI)
NRT DESE: Informatics for Biological System Sustainability (2017–2022); under review

Select Funding

- National Science Foundation: Analytical Chemistry Program – \$390,000 (Original PI: NSF conflict of interest policy required reassignment upon NSF employment)
Harnessing Nanocapsule Materials (2008–2011)
- National Science Foundation: ADVANCE Program – \$499,993 (Original Co-PI: NSF conflict of interest policy required reassignment upon NSF employment)
- NSF COI required reassignment)
Mizzou ADVANCE PAID: Gender Equity in STEM (2007–2010)
- University of Missouri–Columbia: PRIME Fund – \$228,000 (Co-PI)
Mizzou ADVANCE PAID: Gender Equity in STEM at the MU (2007–2009)
- University of Missouri–Columbia: Matching Funds from Colleges of Arts and Science, Engineering, and Agriculture, Food and Natural Resources – \$108,000 (Co-PI)
Mizzou ADVANCE PAID: Gender Equity in STEM MU (2007–2009)
- University of Missouri System: Research Board – \$22,736 (Co-I)
Local Photodynamic Therapy for Squamous Cell Carcinoma (2007)
- National Science Foundation: OISE Program – \$34,994 (SP)
US–Thailand Workshop: Interfaces of Analytical Sciences (2005–2007)
- National Aeronautics and Space Administration – \$73,211 (PI)
Design and Characterization of a New Generation of Space Lubricants (2005–2007)
- National Science Foundation: PAESMEM (Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring) Program – \$10,000 (PI)

- Chemistry is Everywhere and for Everyone (2005–2007)
- University of Missouri–Columbia College of Veterinary Medicine: Clinician Scientist Research Award – \$8,000 (Co-I)
Quantitative Spectroscopic Determination of Photofrin® Following Periocular Subcutaneous Injection in Horses (2005–2006)
 - National Institutes of Health – \$851,772 (Co-I)
Cytosolic Modulation of Plasma Membrane Ion Transport (2003–2006)
 - University of Missouri System: Research Board – \$49,929 (PI)
Selective Quenching Agents in HPLC Separation of PAHs (2001–2002)
 - Research Corporation: Cottrell Scholar Award – \$50,000 (PI)
Starburst Dendritic Polymers for High Performance Liquid Chromatography: Separation of Complex Chiral and Nonchiral Heterogeneous Mixtures (1999–2004)
 - Dreyfus Foundation Special Grant Program in the Chemical Sciences – \$14,310 (PI)
Sharing “*The Magic of Chemistry*” with Girl Scout Juniors (1999–2001)
 - National Science Foundation–CAREER Award: Analytical and Surface Chemistry Program – \$275,000 (PI)
Dendritic Approach to Career Development: Dendrimers, Multidisciplinary Courses and Girl Scouts (1998– 2003)
 - University of Missouri System: Research Board – \$42,435 (PI)
Spectroscopic Characterization of Dendrimers (1997–1998)
 - University of Missouri–Columbia internal grant programs: College of Arts and Science Assistant Professor Travel Funds, Summer Research Fellowships, Research Council Grants and Alumni Association Faculty Incentive Grants – \$37,000 (PI)
 - OSU Graduate College recent grant portfolio: NSF Graduate Research Fellowship Program (GRFP), NSF Louis Stokes Alliance for Minority Participation (LSAMP), NSF Bridge to the Doctorate (BD) and Ford Foundation Doctoral Fellowships
 - OSU Vice President for Research and Technology Transfer recent grant portfolio: NSF Experimental Program to Stimulate Competitive Research (EPSCoR) and NSF Major Research Instrumentation (MRI) grants

Fundraising Activities

- OSU Graduate College – Collaboratively developed an inaugural fundraising strategy, program and “case for support” for the OSU Graduate College, including the interdisciplinary graduate programs reporting to the Graduate Dean, with the OSU Foundation (OSUF). Results include the following: \$500K endowment estate gift for graduate fellowships; Halliburton five-year sponsorship of the OSU *Three Minute Thesis*® Competition; Annual Fund Campaign; establishment and contributions to the Graduate College’s Annual Fund and Dean’s Excellence Funds; stewardship of the OSUF Distinguished Graduate Fellowships; awarding of the new university-wide, endowed Masonic Chair—for Interdisciplinary Research Relating to Men’s Studies; and development of inaugural Presidential Graduate Fellowship program
- MU *Magic of Chemistry*™ Program – \$40,000
Identified, cultivated and successfully solicited prospective donors to support this science education program, resulting in the donation of goods and services and a dozen relationships with companies and alumni, with several partnerships spanning more than a decade

Mentoring Synopsis

Through research and outreach, I effectively broaden the participation of underrepresented groups in science, technology, engineering and mathematics (STEM) across all age levels and am the founder of the nationally recognized *Magic of Chemistry*[™] science-education program for children. As a faculty member, I developed multiple mentoring programs for faculty in STEM and the Arts, Humanities and Social Sciences. Additionally, I actively participated in multiple research programs designed to attract, retain and develop talented, underrepresented students (trained 50 research mentees – over 70% women and minorities). I also regularly served on graduate student committees, inside and outside of chemistry, and advised undergraduate students – majors and non-majors. In recognition of my mentoring contributions, I was honored by the White House, receiving a Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring.

Postdoctoral and Faculty Research Associates

- Dr. Joseph Turner – Service Associate Professor and Director of Instrumentation, Virginia Commonwealth University
- Dr. Charlotte L. Larson – Principal Scientist, NuSil Technology
- Dr. Katrina Kline Walker – Assistant Professor of Chemistry and Physics, Stephan College and Trainer, Ameren's Callaway Energy Center

Graduate Students

- Jena L. Whetstine: PhD (May 2010)
“Characterizing and Understanding Self-Assembling, Nanocapsule Host-Guest Systems”
Assistant Professor, Southwest Baptist University
- Cheerapa Boonyakong: PhD (May 2009)
“Core-Based, Hyperbranched-Polyethyleneimine Coating in Capillary Electrophoresis”
Metrology Researcher, Thailand National Institute of Metrology
- Katrina K. Kline Walker: PhD (May 2009)
“Comparison of Hyperbranched and Dendritic Polymers with Fluorescent Reporter Molecules”
Assistant Professor of Chemistry and Physics, Stephan College and Trainer, Ameren's Callaway Energy Center
- Julie M. Rogers: MS (May 2008)
“Spectroscopic Investigations of Dendritic Cavities Using Fluorescent Probes”
- Lisa K. Norton: MS (May 2008)
“Spectroscopic Investigations of Dendritic Polymers as Molecular Containers”
- Daniel B. Bassil: PhD (May 2007)
“Probing Supramolecular Assemblies via Fluorescent Reporter Molecules”
Director of Analytical Development and Quality Control, BioCryst Pharmaceuticals
- Jesse S. Greever: PhD (August 2005)
“Femtosecond Multiphoton Excited Conductance Spectroscopy: A Study of Ionization and Ions in the Condensed Phase”
Staff Sales Development Engineer, Spectra-Physics Lasers
- Elizabeth J. Morgan: PhD (August 2005)
“Spectroscopic Investigations of the Poly(amidoamine) Dendrimers with Solvatochromic Probes Phenol Blue and Nile Red”
Chemistry Faculty, Mississippi School for Mathematics and Science, Columbus, MS
- Ling Yi: MS (December 2004)

“Using Micellar Liquid Chromatography to Separate Heterogeneous Mixtures of Polycyclic Aromatic Hydrocarbons”

Senior Research Associate, Durect Corporation

- Chunfeng (Kitty) Mao: PhD (May 2003)
“Spectroscopic and Chromatographic Study of Selective Fluorescence Quenchers of Polycyclic Aromatic Hydrocarbons”
Research Scientist, Department of Biochemistry, University of Missouri
- Erin L. Jacobs: MS (December 2002)
“Spectroscopic Investigations of the Poly(propyleneimine) Dendrimers Using the Solvatochromic Probe Nile Red”
Senior Scientist, Irvine Pharmaceutical Services
- Rebecca D. Otte Burns: MS (August 2002)
“Spectroscopic Investigations of the Poly(amidoamine) Dendrimers Using the Solvatochromic Probe Phenol Blue”
Scientific Specialist, Catalent Pharma Solutions
- Dana L. Richter-Egger: PhD (August 2001)
“Spectroscopic Investigations of the Poly(amidoamine) and Poly(propyleneimine) Dendrimers”
Director of the Math-Science Learning Center; Assistant Professor, Department of Chemistry, University of Nebraska–Omaha
- Charlotte L. Larson: PhD (May 2001)
“Spectroscopic Characterization of Polyamido Amine Dendrimers and Their Application in High Performance Liquid Chromatography”
Principal Scientist, NuSil Technology
- Deborah A. Bass Wade: PhD (August 2000)
“Examination of Selective Quenching Agents for Polycyclic Aromatic Hydrocarbons in Polyamido Amine Dendrimers”
Senior Manager-Quality Control, Catalent Pharma Solutions
- Hong (Jane) Li: MS (December 1999)
“Spectrochemical Investigations of Carboxylate-Terminated Polyamido Amine Dendrimers with Reichardt’s Et (30) Dye”
Chemist, Barr Laboratories

Undergraduate Students

- Sarah Stansfield: Honors College Discovery Fellow
- Lorraine Leathers: Research Assistant
- Essence Brice: EMERGE Summer Undergraduate Research Intern
- Samantha Lawson: Research Assistant
- Amie Norton: Research Assistant
- Laura Heinzke: Research Assistant
- Deletria Battle: LS-MoAMP Summer Undergraduate Research Intern
- Rebecca L. Witherow: Research Assistant
- Victoria N. Oja: MU EXPRESS Program Research Assistant
- Parker J. Hu: Research Assistant
- Philip P. Cheney: Research Assistant
- Agnes A. McCall: Honors College Discovery Fellow

- Julie M. Rogers: Stevens Research Fellow
- Katharine C. Lane: Research Assistant
- Jason E. Spitz: Research Assistant
- Kelly E. McGill: Research Assistant; Arts & Science Research Mentor Program Fellow; IM Kolthoff Enrichment Award Recipient (American Chemical Society Analytical Division, 2003)
- Aaron Tesfai: MU EXPRESS Program Research Assistant; Life Science Undergraduate Research Opportunity Program Fellow; 2002 Barry Goldwater Scholar
- Chad Guilliams: Research Assistant
- Collin E. Woods: Research Assistant
- Tracie D. Thomas: MU EXPRESS Program Research Assistant
- Spencer J. Flamm: Research Assistant
- Jeff C. Landry: Stevens Research Fellow
- Allison C. Hollenbeck (Kleiber): Arts & Science Research Mentor Program Fellow
- Minh Duc T. Nguyen: Research Assistant
- Thomas J. Hoeft: Research Assistant
- Jaromir Literak: Stevens Research Fellow
- Loren Jones: MU EXPRESS Program Research Assistant
- Danielle Y. Rice: MU EXPRESS Program Research Assistant
- Paulette A. Torres: Research Assistant
- Charmaine R. Wallace: MU EXPRESS Program Research Assistant
- Matthew E. Schaefer: Stevens Research Fellow

Select Recent Professional Service

International, National, State and Local Communities

- Council of Graduate Schools Committee on the Master's Degree: advisory committee member (2016–2018)
- Council of Graduate Schools 2016 Project on the Master's Degree: Phase II (2016-2017)
- "Doctoral Education and Learning Outcomes Frameworks," Lumina Foundation invitation-only convening, Washington, DC, September 28, 2016
- Council of Graduate Schools 2016 Project on the Master's Degree: Phase I (2016)
- Council of Graduate Schools PhD Career Pathways Advisory Committee: member (2015)
- "Grad Schools Try to Ease 'Culture Problem' of Anxiety and Isolation," quoted in *Chronicle of Higher Education* article by V. Patel, August 31, 2015
- Oklahoma EPSCoR Advisory Committee; appointed by the Oklahoma State Regents for Higher Education (2014–2016)
- Council of Graduate Schools/ProQuest Distinguished Dissertation Award in mathematics, physical sciences and engineering: committee chair (2014)
- Initiated and chaired the Conference of Southern Graduate Schools *Three Minute Thesis*[®] *Regional Finals* (2014, 2015, 2016)
- Vietnam Education Foundation Oral Examination/Interview Mission for the VEF 2014 Fellowship and Visiting Scholar Programs: in-country reviewer, Hanoi and Ho Chi Minh City, Vietnam (2013)
- Conference of Southern Graduate Schools, elected Executive Committee Member (2013–2016)
- CGS/ProQuest Distinguished Dissertation Award in mathematics, physical sciences and engineering: selection committee member (2012)

- Federal Interagency Working Group on STEM Graduate Fellowships: member (2010– 2011)
- Kuwait University College of Graduate Studies, Kuwait University, Kuwait City, Kuwait: academic consultant (Fall 2010–Winter 2011)
- National Academies Fellowship Roundtable: member (2009–2011)
- Oklahoma State University, NSF ADVANCE Mentoring Program: academic consultant (January –October 2009)
- Northern Illinois University, Department of Chemistry and Biochemistry: external reviewer (February 8–10, 2009)
- “Mentoring for Science, Technology, Engineering and Mathematics Workforce Development and Lifelong Productivity: Success across the K through Grey Continuum,” 2005 PAESMEM Position Paper for the NSF Director: coordinating author (2005–2006)
- Reviewer for various international, federal and state grant programs and scientific journals and book publishers

University Communities

- Served on numerous executive-level search committees: Provost and Senior Vice President for Academic Affairs; Vice President for Research (Committee Chair), Dean for the Spears School of Business (Committee Chair), Founding Director for Office of Corporate Engagement (Committee Chair); Assistant Provost for Online Education (Committee Co-Chair); Vice Dean for the Watson Graduate School of Management; Program Directors for NSF
- Chaired numerous award committees: President’s Cup; Masonic Endowed Chair; Provost’s Interdisciplinary Grant Program; Humphreys Endowed Chairs in School of International Studies
- Served on numerous university-wide committees: Evaluation of Instruction Task Force; Online Education Steering Committee; Task Force for Implementation of a Financial Model for Outreach Education (Chair); Graduate Student Support Initiative (Chair); Financial Literacy
- Convened task forces and working groups to collaboratively address future directions: Animal Care and Use Working Group; Intellectual Property Working Group; Research Week Working Group; Graduate Admissions Working Group; Graduate Teaching Assistant Professional Development Working Group; Research Misconduct Group; University Faculty Preparation Graduate Certificate Working Group
- Served on the OSU Research Foundation and Cowboy Technologies Boards, evaluating and advancing faculty inventions to commercial success
- Hired several administrators and professional staff: Associate Deans for the Graduate College; Directors for Environmental Science and Master of Public Health programs; Faculty Fellows for the Office of Research and Graduate College
- Served on numerous faculty and staff search committees at MU, OSU and NSF
- Involved in the preparation for OSU’s reaccreditation with the Higher Learning Commission
- Serve/d on Provost’s Staff; Provost’s Council; Deans’ Council; Academic Unit Heads; President’s Cabinet
- Chair Graduate Faculty Council (ex officio, non-voting)
- Attend and participate Oklahoma A&M Colleges Board of Regents meetings
- Participate in annual college budget meetings and discussions on behalf of Academic Affairs
- Contribute to the annual Academic Plan and participate in academic program reviews for the Oklahoma State Regents for Higher Education

Select Recent Professional Development Activities

- “Philanthropic Workshop for Deans and Other Academic Leaders,” Advancement Resources, Oklahoma State University, Stillwater, OK, participant, November 2011 and January 2015
- “PAESMEM Awardee Conference,” National Science Foundation, Arlington, VA, December 1–2, 2011.
- 76th National Leadership Forum, American Council on Education, Washington DC, selected participant, December 1–3, 2010.
- “Bologna Turns Ten: Transatlantic Student Mobility in the German and European Higher Education Context,” Germany Today 2010, German Academic Exchange Service (DAAD), Bonn/Berlin, Germany and Brussels, Belgium, selected participant, June 12–19, 2009.
- “New Deans Institute” and Workshop, Council of Graduate Schools Summer Workshop, Quebec City, Canada, July 11–15, 2009.
- Council on Advancement and Support of Education District VI Conference, Kansas City, MO, January 25–27, 2009.
- “University of Missouri System Leadership Development Program,” University of Missouri System, Columbia, MO, selected participant, 2008.
- “Academic Leadership,” NSF Mizzou ADVANCE, University of Missouri, Columbia, MO, October 16–17, 2008.
- “The Wakonse Conference of College Teaching,” sponsored by the Wakonse Foundation, invited participant, Shelby, MI, May 25–30, 2000.

Teaching Activities (Note: innovations at that time may no longer be considered as such.)

General Chemistry III

- This introductory course with laboratory component covers kinetics, equilibria, acid-base chemistry, electrochemistry and nuclear chemistry. It is required by a large number of degree programs, such as chemistry, biology, physics, biochemistry, engineering and pre-professional programs. The faculty member is responsible for all aspects of the course – schedule, content, web site, lectures, examinations, grades, laboratory and teaching assistant oversight.
- **Innovations.** Created online note outlines to facilitate learning in this large lecture class. This format, which allows the student to actually listen to the discussion rather than frantically writing every uttered word, was subsequently adopted by colleagues.
- **Enrollments and Evaluations.** E.g., Winter 1999 (Enrollment 300; Tucker Evaluation 3.48/4.00); Average Departmental Evaluation: 2.85/4.00

Quantitative Methods of Analysis

- This upper-level analytical chemistry course with laboratory component covers the principles and practice of quantitative analysis, including the fundamentals of modern instrumental methods. It is mostly populated by juniors and seniors from chemistry, biochemistry, chemical engineering and pre-professional programs. The faculty member is responsible for all aspects of the course – schedule, content, web site, lectures, examinations, grades, laboratory and teaching assistant oversight.
- **Innovations.** Created a “turn-key” course used by all Analytical Division members (designed WebCT site; authored course syllabus, learning objectives and quizzes; created TA manual and overhauled student lab manual) and designed finals that have students applying knowledge to real-world project through problem-based learning.

- **Enrollments and Evaluations.** E.g., Winter 2007 (Enrollment 75; Tucker Evaluation 3.70/4.00); Average Departmental Evaluation: 3.18/4.00

Instrumental Methods of Analysis

- This senior-level analytical chemistry course with laboratory component focused on advanced instrumental methods of analysis, such as atomic and molecular spectroscopy, electrochemistry and chemical separations. It is populated by seniors seeking an American Chemical Society certified BS degree in chemistry and graduate students from other departments. The faculty member is responsible for all aspects of the course – course schedule, content, web site, lectures, examinations, grades, laboratory and teaching assistant oversight.
- **Innovations.** Instituted a poster presentation, covering a specific analysis technique not discussed in the course, to broaden the students' exposure to modern instrumental methods.
- **Enrollments and Evaluations.** E.g., Fall 2001 (Enrollment 13; Tucker Evaluation 3.73/4.00); Average Departmental Evaluation: 3.40/4.00

Graduate Topics in Analytical Chemistry

- These core curricula (e.g. Analytical Measurement) and special topic (e.g. Luminescence Spectroscopy) graduate courses cover all advanced aspects of modern analytical spectroscopy. They are mostly populated by chemistry graduate students. The faculty member is responsible for all aspects of the course, from course schedule, content, lectures, examinations and grades.
- **Innovations.** Complete course development for each course offering. Emphasized literature-based assignments to broaden student knowledge/interests and instituted in-class peer-reviewed presentations to enhance public speaking skills, while introducing the scientific review process.
- **Enrollments and Evaluations.** E.g., Fall 2005 (Enrollment 17; Tucker Evaluation 3.58/4.00); Average Departmental Evaluation: 3.40/4.00

Seminar for Beginning Graduate Students

- This graduate-level course covers general laboratory safety, graduate program policy and faculty research activities. It is the orientation class for entering chemistry graduate students. The faculty member is responsible for all aspects of course, from course schedule, content, lectures and grades.
- **Innovations.** Expanded course coverage to include Departmental policy (authored Department Graduate Student Handbook), research mentor selection, Graduate Student Progress System training and electronic literature resources. Formalized research group affiliation process.

Seminar in Chemistry

- This is a graduate-level seminar series is entitled, DyNAMITE (**D**ynamics, **N**uclear, **A**nalytical, **M**aterials, **I**norganic, **T**heoretical and **E**nvironmental). Lecturers in the fall semester are mainly faculty from neighboring institutions, and speakers in the winter semester are second-year graduate students that are required to present a literature or research seminar. The faculty member is responsible for all aspects of the seminar series, from schedule to grades.
- **Innovations.** Instituted peer and faculty review of student presentations to provide feedback.

Undergraduate Research in Chemistry

- These courses are laboratory research courses at the beginning and senior-undergraduate level, including senior honors thesis projects. The faculty member is the research advisor.

Thesis/Dissertation Research

- These courses are laboratory research courses at the masters and doctoral-level, pre- and post-candidacy. The faculty member is the research advisor and takes an active role in the graduate students' course selection and all other requirements leading to a degree (e.g., direct their dissertation research projects and job placement).

Research Group Meetings

- Held weekly group meetings with research students to discuss their research, current literature and problem solving. Students make semi-formal presentations on their research progress.

Departmental Cumulative Examinations

- Wrote cumulative exams on specific scientific topics that serve as part of the written portion of the PhD candidacy qualification process.