

Curriculum Vitae

Luke Hanley, Professor and Head
Department of Chemistry (m/c 111)
University of Illinois at Chicago (UIC)
845 West Taylor Street, 4500 SES
Chicago, IL 60607-7061
UIC Office Phone: +1-312-996-0945

October 5, 2017
chem.uic.edu/hanley

Email: LHanley@uic.edu

I. Overview

Personal Data

Birth Year: 1961 Birthplace: New York State Marital Status: Married
Passed multiple criminal background checks: NSF application in 2017 & TSA Global Entry in 2014

Education

State University of New York at Stony Brook: Ph.D. in Chemistry, May 1988
University of Toronto, B.Sc. and Specialist in Chemistry, Nov. 1983

Professional Experience

2017 - 2018 Program Director for Macromolecular, Supramolecular & Nanochemistry; Division of Chemistry; Directorate for Mathematical & Physical Sciences; National Science Foundation (on Intergovernmental Personnel Act assignment as of October 2017)
2001 - Present Professor, Departments of Chemistry & Bioengineering, UIC
2010 - 2017 Head, Department of Chemistry, UIC
1996 - 2001 Associate Professor, Department of Chemistry, UIC
1998 - 2001 Associate Professor (Adjunct), Department of Bioengineering, UIC
1998 Visiting Professor; Department of Chemistry, Materials, and Forensic Sciences; University of Technology, Sydney; Australia (January – May only)
1990 - 1996 Assistant Professor, Department of Chemistry, UIC
1996 - 1997 Guest Associate, Argonne National Laboratory
1988 - 1990 Postdoctoral Research, Advisor: John T. Yates, Jr. (deceased), University of Pittsburgh
1984 - 1988 Graduate Research Associate with Scott L. Anderson (Ph.D. advisor, now at University of Utah), State University of New York at Stony Brook
1982 - 1983 Undergraduate Research Assistant with Michael Thompson, University of Toronto

Honors and Awards

UIC Researcher of the Year in Natural Sciences and Engineering, 2009
Fellow of the American Vacuum Society, 2009, Cited for "For the development of a laser desorption post ionization mass spectrometer for surface analysis of biological materials."
U.S. Young Observer to International Union of Pure and Applied Chemistry (IUPAC), Brisbane, 2001
National Science Foundation Young Investigator Award in Chemistry, 1994 - 1998
Teaching Recognition Award, UIC, 1997
Excellence in Teaching Award, runner up, 1998 and 1999
University Scholar Award, University of Illinois at Chicago, 1995
National Science Foundation Postdoctoral Research Fellowship in Chemistry, 1988 - 1990
SUNY at Stony Brook Graduate School Dissertation Fellowship, Sept. 1987 - April 1988
Sigma Xi, May 1988

Table of Contents for Remainder of CV

II. Research Interests.....	2
III. Recent Publications.....	2
IV. Current Grants.....	4
V. Educational Activities.....	5
VI. Activities as Department Head 2010 – 2017 & Other Service.....	6
VII. Summary of International Interactions.....	11
VIII. Invited Lectures & Contributed Presentations (only recent).....	11

II. Research Interests

Our research lay at the interface of analytical chemistry, mass spectrometry, bioengineering, and surface science. We apply advanced instrumental methods to modify and characterize both biological and materials surfaces in several distinct projects. In some cases, this involves the construction of novel instrumentation. Other cases involve the use of advanced instrumentation located in our laboratory, in UIC's centralized instrumentation facility known as the Research Resources Center, or in synchrotron radiation research user facilities such as the Advanced Light Source at Berkeley. Many of these experimental methods involve photon, ion, or cluster interactions with gaseous molecules or solid surfaces that lead to photoionization, photoemission of electrons, laser ablation or sputtering of material from surfaces.

- **Laser Desorption Postionization Mass Spectrometric Imaging of Biofilms & Organic Films.** Mass spectrometric imaging is used to probe bacterial biofilms, organic semiconductors, mammalian tissues, and other complex molecular surfaces with micron lateral and depth resolution. Molecular and elemental species are detected in intact samples in a method known as laser desorption postionization mass spectrometry (LDPI-MS) imaging. LDPI-MS imaging, matrix-assisted laser desorption ionization mass spectrometry and secondary ion mass spectrometry are all used to probe antibiotics, proteins, peptides, and metabolites within intact biofilms with the ultimate goal of advancing novel biofilm control methods. Bottom proteomics via traditional methods are also performed for this purpose and to compare with LDPI-MS and other methods.
- **Applying Advanced Surface Analysis Methods.** We have applied many other methods in advanced surface analysis to the above problems. These methods include X-ray and ultraviolet photoelectron spectroscopy, near edge X-ray absorption spectroscopy, X-ray surface scattering, transmission and scanning electron microscopy, transmission and reflection infrared spectroscopy, linear and nonlinear optical absorption of films, quartz crystal microbalance measurement of film deposition or removal, and X-ray diffraction.

III. Recent Publications

Since 2011 only, out of 131 total refereed & 15 non-refereed. Senior author is underlined.

131. "Solid sampling with a diode laser for portable ambient mass spectrometry", Y.P. Yung, R. Wickramasinghe, A. Vaikkinen, T.J. Kauppila, I.V. Veryovkin, and L. Hanley, *Anal. Chem.* **89** (2017) 7297-7301. <http://dx.doi.org/10.1021/acs.analchem.7b01745>, PMID: PMC5518277
130. "Metal impurity-assisted formation of nanocone arrays on Si by low energy ion-beam irradiation", K. Steeves Lloyd, I.L. Bolotin, M. Schmeling, L. Hanley, I.V. Veryovkin, *Surf. Sci.* **652** (2016) 334-343. <http://dx.doi.org/10.1016/j.susc.2016.03.016>
129. "ChiMS: Open-source instrument control software platform on LabVIEW for imaging/depth profiling mass spectrometers", Y. Cui and L. Hanley, *Rev. Sci. Instrum.* **86** (2015) 065106. <http://dx.doi.org/10.1063/1.4922913> PMID: 4482810

128. "High lateral resolution vs. molecular preservation in near-IR fs-laser desorption postionization mass spectrometry" Y. Cui, I.V. Veryovkin, M.W. Majeski, D.R. Cavazos, and L. Hanley, Anal. Chem. **87** (2015) 367-371. <http://dx.doi.org/10.1021/ac5041154> (open access)
127. "Internal energy of thermometer ions formed by femtosecond laser desorption: Implications for mass spectrometric imaging", S. Milasinovic, Y. Cui, R.J. Gordon and L. Hanley, J. Phys. Chem. C **118** (2014) 28938-28947. <http://dx.doi.org/10.1021/jp504062u> (open access)
126. "Cluster beam deposition of Cu_{2-x}S nanoparticles into organic thin films", M.W. Majeski, I.L. Bolotin, and L. Hanley, ACS Appl. Mater. Interf. **6** (2014) 12901-12908. <http://dx.doi.org/10.1021/am5028428>
125. "Ion sources for mass spectrometric identification and imaging of molecular species", C. Bhardwaj and L. Hanley, Nat. Prod. Rep. **31** (2014) 756-767. <http://dx.doi.org/10.1039/C3NP70094A>
124. "Differentiation of microbial species and strains in coculture biofilms by multivariate analysis of laser desorption postionization mass spectra", C. Bhardwaj, Y. Cui, T. Hofstetter, S.Y. Liu, H.C. Bernstein, R.P. Carlson, M. Ahmed, and L. Hanley, Analyst **138** (2013) 6844-6851. <http://dx.doi.org/10.1039/C3AN01389H>, PMID: 3833099
123. "Molecular imaging and depth profiling of biomaterials interfaces by femtosecond laser desorption postionization mass spectrometry, Y. Cui, C. Bhardwaj, S. Milasinovic, R.P. Carlson, R.J. Gordon, and L. Hanley, ACS Appl. Mater. Interf. **5** (2013) 9269-9275. <http://dx.doi.org/10.1021/am4020633>
122. "Laser desorption VUV postionization MS imaging of a cocultured biofilm", by C. Bhardwaj, J.F. Moore, Y. Cui, G.L. Gasper, H.C. Bernstein, R.P. Carlson, and L. Hanley, Anal. Bioanal. Chem. **405** (2013) 6969-6977. <http://dx.doi.org/10.1007/s00216-012-6454-0>, PMID: PMC3566334.
121. "Quantification of antibiotic in biofilm-inhibiting multilayers by 7.87 eV laser desorption postionization MS imaging", M. Blaze M. T., A. Akhmetov, B. Aydin, P.D. Edirisinghe, G. Uygur, and L. Hanley, Anal. Chem. **84** (2012) 9410-9415. <http://dx.doi.org/10.1021/ac302230e>, PMID: 3491138.
120. "Acetylene ion-enhanced bonding of PbS nanoparticles to quaterthiophene in thin films", by F.D. Pleticha, D. Lee, S.B. Sinnott, I.L. Bolotin, M.W. Majeski, and L. Hanley, J. Phys. Chem. C **116** (2012) 21693-21698. <http://dx.doi.org/10.1021/jp306668k>
119. "Depth profiling and imaging capabilities of an ultrashort pulse laser ablation time of flight mass spectrometer", Y. Cui, J.F. Moore, S. Milasinovic, Y. Liu, R.J. Gordon, and L. Hanley, Rev. Sci. Instrum. **83** (2012) 093702. <http://dx.doi.org/10.1063/1.4750974>, PMID: PMC3461015
118. "Identification and imaging of peptides and proteins on *Enterococcus faecalis* biofilms by matrix assisted laser desorption ionization mass spectrometry", M. Blaze M. T., B. Aydin, R. Carlson, and L. Hanley, Analyst **137** (2012) 5018-5025. <http://dx.doi.org/10.1039/C2AN35922G>, PMID: PMC3654527.
117. "Photoresponse of PbS nanoparticle - quaterthiophene films prepared by gaseous deposition as probed by XPS," M.W. Majeski, F.D. Pleticha, I.L. Bolotin, L. Hanley, E. Yilmaz and S. Suzer, J. Vac. Sci. Technol. **30** (2012) 04D109. <http://dx.doi.org/10.1116/1.4709386>. Also published in the Virtual Journal of Nanoscale Science & Technology 25:20 (2012)
116. "Feasibility of depth profiling of animal tissue by ultrashort pulse laser ablation," S. Milasinovic, Y. Liu, C. Bhardwaj, M. Blaze M.T., R.J. Gordon and L. Hanley, Anal. Chem. **84** (2012) 3945-3951. <http://dx.doi.org/10.1021/ac300557a>, PMID: PMC3371643

115. "Synthesis of PbS nanocrystal/functionalized conducting polymers for plastic solar cells", M. Zhou, B. Wang, X. Jiang, A.A. Zakhidov, J.P. Ferraris, D. A(s)unskis, and L. Hanley, *Inter. J. Nanosci.* **10** (2011) 521-532.
114. "Brominated tyrosine and polyelectrolyte multilayer analysis by laser desorption VUV postionization and secondary ion mass spectrometry", M. Blaze M.T., L.K. Takahashi, J. Zhou, M. Ahmed, G.L. Gasper, F.D. Pleticha, and L. Hanley, *Anal. Chem.* **83** (2011) 4962-4969
<http://pubs.acs.org/doi/abs/10.1021/ac200693h>, PMID: [PMC3115520](https://pubmed.ncbi.nlm.nih.gov/3115520/)

IV. Current Grants

Total external support attributed directly to LH at UIC: ~\$13M. Total external support to UIC from grants on which LH was a PI, co-I, or other major participant: ~\$35M. Prior funded received from National Science Foundation, National Institutes of Health, Department of Defense, Department of Energy, Petroleum Research Fund, and other sources.

Title: "Computational Studies of Mass Resolving Power of RAIMP-based TOF MS systems"

Award Number: UIC KC 083507

Source of Support: CAMECA Instruments, Inc (private company)

Total Award Period: 12/1/16 - 12/31/19

Total Award Amount: \$182k (reflects year one only – funds awarded on an annual basis)

Annual Direct Costs: \$127k

Major Goals: Exploring commercialization of mass spectrometry methods developed in Hanley lab.

Role: PI

Title: "Predictive Multiscale Modeling of Microbial Consortia Biofilms"

Award Number: 5U01EB019416

Source of Support: NIH/NIBIB

Total Award Period: 9/30/14 - 5/31/18

Total Award Amount: \$1.6M

Annual Direct Costs: \$250k, \$56k UIC

Major Goals: Create multiscale model of chronic wound consortia biofilm. Test and refine model predictions through iterative rounds of in vitro experiments using three chronic wound bacterial isolates.

Role: co-I (PI: Ross Carlson, Montana State University)

Title: "Determination of Trace Element Abundances in Genesis Solar Wind Collectors by Resonance Ionization Mass Spectrometry"

Award Number: 15-LARS15_2-0004

Source of Support: National Aeronautics & Space Agency (SMD/Planetary Science Division)

Total Award Period: 5/16/16 - 5/15/19

Total Award Amount: \$1.45M

Annual Direct Costs: \$344k

Major Goals: Build a custom mass spectrometer for detection of rare component elements of solar wind that were embedded into samples on the Genesis project.

Role: co-I (PI: Igor Veryovkin, Research Associate Professor, UIC Chemistry)

Title: "fs-LDPI MS Mapping of Organic Compounds in Deep Time Earth Sediments: A Tool for Determination of the Spatial Distribution of Lipid Biosignatures at the Micron Scale"

Award Number: 16-EXO16_2-0168

Source of Support: National Aeronautics & Space Agency (SMD/Planetary Science Division)

Total Award Period: 5/16/17 - 5/15/20

Total Award Amount: \$352k

Annual Direct Costs: \$103k

Major Goals: Use advanced methods in mass spectrometry to chemically analyze hydrocarbons in micron sized regions of geological samples.

Role: co-I (PI: F. Kenig, UIC Earth & Environmental Sciences)

V. Educational Activities

Courses Taught At UIC

Chem 305, Environmental Chemistry. Taught S16, S14, S10, S08. Enrollment: 15-30 undergraduates.

Chem 520, Liter. Seminar in Analytical Chemistry. Taught S17, S12, S10, S08, S07, F06, S06, S05, S03, S02. Enrollment: 6-20 graduates.

Chem 522, Intro. to Mass Spectrometry & Surface Analysis. Taught F09, F08, S07, F04, S03, F00, F98, F96, F95, S95, F92 & F90 (under Chem454). Enrollment: 20-30 graduates.

Chem 343, Physical Chemistry Laboratory. Taught F05, S97, S96, F95.

Chem 421, Instrumental Analysis. Taught F02, S02.

Chem 222, Intro. to Analytical Chemistry. Taught S01, Sum00, F99, S99, S92, F91, S91 (under Chem 121).

Chem 114, General College Chemistry II. Taught S92.

Curriculum Development

Redevelopment of Chem 305, Environmental Chemistry: 2007-2014. This course number was used to teach an entirely new course on environmental and energy chemistry. It introduces the chemical science behind established and upcoming sources of energy: fossil fuels, biofuels, fuel cells, solar cells, nuclear energy, batteries, and energy sources that employ basic thermodynamic principles.

Development of Chem 520, Literature Seminar in Analytical Chemistry: 2001 - 2003. Developed this course from a lecture on analytical chemistry topics.

Overhaul of Chem 522, Techniques in Mass Spectrometry and Surface Analysis: 2002- 2003. Added surface analysis component to course. Applied for and received campus approval for change in name.

Development & Overhaul of Chem 421, Instrumental Analysis: 2002. Instrumental analysis course for chemistry majors and graduate students in analytical chemistry. Now taught by Stephanie Cologna.

Overhaul of Chem 343, Physical Chemistry Laboratory: 1993 - 1996. Wrote several internal and external funding requests for this course and completely redesigned its curriculum. Restructured this course from a two to a one semester course, which allowed this course to become a requirement of the Biochemistry B.Sc. program.

Development of the Graduate Analytical Chemistry Program: 1990 - 2010. First analytical chemist faculty hired by the department. Developed analytical graduate program: graduate analytical chemistry lecture courses & cumulative exams.

Overhaul of Chem 222, Introduction to Analytical Chemistry: 1991 - 1999. Lead implementation of all new laboratory experiments and curriculum for this course. Secured funding for laboratory renovation.

Graduate & Postgraduate Advisees

Postgraduate Staff Currently Supported: Research Associate Professor Igor V. Veryovkin, Visiting

Research Assistant Professor Emil Tripa and Research Assistant Professor Igor L. Bolotin

Current Graduate Advisees: Yenu Yung, Grant Barry, R. Wickramasinghe, A. Pulukkody, Jason Gross

Michael W. Majeski. 3/15, "Fundamental studies of semiconductor metal chalcogenide nanocomposite bulk heterojunction thin films", <http://hdl.handle.net/10027/19492>, currently: Intel, Portland, OR

Yang Cui, Ph.D. 1/15, "The application of ultrafast laser pulses to laser desorption mass spectrometry", currently: BaySpec, Inc., San Jose, CA

Slobodan Milasinovic, Ph.D. 5/14, "Feasibility of biological mass spectrometry imaging and depth profiling by ultrashort laser pulses", currently: Orochem, Naperville, IL

Chhavi Bhardwaj, Ph.D. 4/14, "Laser desorption postionization mass spectrometric analysis of multispecies coculture biofilms", <http://hdl.handle.net/10027/19076>, Orochem, Naperville, IL

Artem Akhmetov, Ph.D. 3/13, "Detection of peptides, amino acids, and antibiotics by laser desorption postionization mass spectrometry", currently: BP, Naperville, IL

- Melvin Blaze M.T., Ph.D. 8/12, "MS imaging for small molecule, peptide and protein detection in multilayers and bacterial biofilms", currently: Pepsico, New Haven, CT
- Gerald L. Gasper, Ph.D. 5/11, "MS imaging of antibiotics within *Staph. epidermidis* bacterial biofilms by laser desorption postionization", currently: Denver Zoo
- Peter J. Koin, Ph.D. 7/10, "Analysis of the degradation of dental composite materials by mass spectrometry and nanoindentation", currently: Assistant Chief Toxicologist, Cook County Medical Examiner's Office, Chicago, IL
- Adam M. Zachary, Ph.D., 9/09, "Cluster beam deposition of nanoparticles in organic matrices for optoelectronic applications", currently: Shelby County Health Department, Memphis, TN
- Amanda T. Wroble, Ph.D., 11/08, "Photoemission studies of donor/acceptor materials for photovoltaic applications", currently: Chemist, USEPA, Chicago, IL
- Stephanie Tetzler, M.Sc., 10/07, "Characterization of poly-3(hexylthiophene) films bombarded by keV C₆₀ and SF₅ ions", currently: laboratory chemist at M. Holland Co., Northbrook, IL
- Manshui Zhou, Ph.D., 12/06, "Surface analysis of dental composite and its polymeric overlayer model system by mass spectrometry," currently: Coca Cola, Atlanta, GA
- Praneeth Edirisinghe, Ph.D., 8/06, "Derivatization 7.87 eV postionization mass spectrometry and its application to biofilm characterization," currently: consultant, Chicago, IL
- Yongsoo Choi, Ph.D., 6/06, "Surface polymerization by ion-assisted deposition for polythiophene film growth," currently: Assistant Professor, Korea Institute of Science and Technology, South Korea
- Sanja Tepavevic, Ph.D., 3/06, "Characterization of conducting polymer films grown via surface polymerization by ion-assisted deposition", currently: Argonne National Laboratory, IL
- Carrie Crot, Ph.D., 2/06, "Probing the solid-liquid interface of synthetic biomaterials via X-ray scattering techniques," currently: agent, Federal Bureau of Investigation, New York, NY
- Chunping Wu, M.Sc., 12/05, "Laser desorption postionization time of flight instrumentation and application to dental materials," currently: ExxonMobil Research & Engineering, Annandale, NJ
- Syed S. Lateef, Ph.D., 3/05, "Surface modification of silicone polymer to enhance cell adhesion," currently: Agilent India
- Erick Fuoco, Ph.D. 2003, currently: Physical Science Department Chair, Daley College, Chicago, IL
- Muthu Wijesundara, Ph.D. 2001, currently: staff scientist, Univ. of Texas, Arlington, TX
- David G. Schultz, Ph.D. 1999, currently: physics teacher, Main High School, IL
- Jennifer L. Trevor, Ph.D. 1999, currently: API Development Manager, Product Development Amylin Pharmaceuticals, San Diego, CA
- Hanjo Lim, Ph.D. 1999, currently: staff scientist, Adventis Pharmaceuticals, NJ
- Earl T. Ada, Ph.D. 1998, currently: Manager, Campus Materials Characterization Laboratory, Univ. Massachusetts Lowell
- Oleg Kornienko, Ph.D. 1998, currently: staff scientist, Merck Research Laboratories, NJ
- Samuel Wainhaus, Ph.D. 1997, currently: staff scientist, Scheering Plough Research Institute, NJ
- Sean Brynjelsen, M.S. 1996, currently: Baxter Healthcare, Round Lake, IL
- John Burroughs, Ph.D. 1995, currently: Hospira, Hoffman Estates, IL
- Quincey Wu, Ph.D. 1993, entrepreneur
- Former Postgraduate Staff: Dr. Daniel Asunskis, currently Assistant Professor, Black Hills State University. Dr. Berdan Aydin, currently employed by UIC College of Dentistry

VI. Activities as Department Head 2010 to 2017 & Other Service

A department head should never claim responsibility for everything accomplished in the department under their supervision. However, a head can try to identify those activities that have been facilitated under their tenure. My philosophy as department head was to find the best people for a given position, either faculty or staff, then provide them with the resources needed to accomplish the goals of the department, the university, their students, and themselves. I tried to connect people with like interest and goals, both within the department and beyond. I also tried to reorganize departmental functions for improved operation and increased efficiency, fulfilling our responsibility to use State of Illinois resources to the greatest impact possible. Along the way, I often had to mediate interpersonal interactions within the department to allow everyone to get their jobs done. I particularly tried to protect and develop new faculty and staff, and at times, this required challenging established practices. Finally, I always tried to consult with Chemistry faculty and staff as well as with the College of Liberal Arts & Sciences (LAS) to build consensus and support for change.

Chemistry Department at a Glance

Year ¹	Faculty ² Tot/TT/URMW	New Faculty Hires ³ TT & NTT	Papers ⁴	External Funding	Ugrads in Chem Courses: Sp/Su/F
2017	34.3 / 26.3 / 10	Glusac, Zhou, <i>Yermolina</i>	TBD	TBD	TBD
2016	32.3 / 24.3 / 10	DiMagno (0.33), <i>Islam</i>	~120	\$4.8M	4300/ NA / 6060
2015	31 / 25 / 11	Cologna, Aldrich, Jiang, <i>Veryovkin</i>	~105	\$4.6M	4180 / 530 / 4850
2014	28.5 / 22.5 / 9	Yang, <i>McQuade</i> , <i>Clark</i>	88	\$4.6M	4220 / 550 / 4770
2013	27.5 / 23.5 / 6	Cabana	83	\$3.6M	4180 / 660 / 4650
2012	27 / 24 / 5	Mohr, Mankad, Lorieau, <i>Modey</i> , <i>Bolotin</i>	107	\$4.6M	3990 / 680 / 4840

- 1) Mostly calendar year data, except for funding (FY) or as noted otherwise.
- 2) Tot = all tenure track, clinical and research, excepting visiting research faculty as of Dec. 31 / TT = tenure track faculty / URMW = underrepresented minorities & women.
- 3) NTT include research assistant prof. and conversions from lecturers to clinical asst. prof. All start AY+1 (i.e., AY16 for 2015).
- 4) Includes both peer reviewed publications and book chapters, but not non-peer reviewed papers.

Supervised the 2014-2015 Program Review of Chemistry, the first in over eight years, as mandated by the Illinois Board of Higher Education. The university endorsed the report's largely positive evaluation of the department including the educational and research activities described therein.

Hiring and Retention of Tenure Track Faculty & Development of Research

- Research productivity increased in Chemistry from 2010 – 2017 largely focused into four areas: 1) drug discovery and disease pathways, 2) materials & interfaces for energy applications, 3) new instrumental analysis & imaging methodologies, and 4) computational research. Not reflected in the FY16 numbers are new grants secured in late FY15 and FY16 from NASA, the National Science Foundation, the Department of Energy, the National Institutes of Health (including collaborative grants on drug discovery with the West Campus), and the Army Research Laboratory. Publications and citations continue to improve overall for department faculty.
- Hired 11 tenure track faculty from 2012 to 2017, of which one is joint with Argonne National Laboratory, another is joint with UIC Medicinal Chemistry, and one was an LAS Science Endowed Chair jointly with Physics.
- Retained several full professors who received outside offers.
- Increased faculty participation in UIC's Center for Structural Biology.
- Facilitated internal research funds to multiple faculty in consultation with LAS.
- Negotiated retirements of six faculty.

Clinical & Research Faculty to Support Teaching & Research Mission of Department

- Hired a Research Associate Professor who then secured a \$1.45M NASA grant.
- Hired four clinical faculty who have the following duties in addition to teaching:
 - Supervise undergraduate research to bring it into alignment with American Chemical Society requirements for certified B.Sc. degree.
 - Director of General Chemistry who schedules courses, assigns teaching assistants (TAs) and lecturers to courses, and coordinates the freshman chemistry curriculum and courses.
 - Director of the Science Learning Center who supervises this student tutoring center and teaches Chem 130, Survey of Organic and Biochemistry, sophomore chemistry for pre-nursing, and serves as co-PI on a 2014 grant from the National Science Foundation (NSF).
 - Supervises and teaches Chem 233, Organic Chemistry Laboratory.
- Hired a Research Assistant Professor to support chemical instrumentation and experimental development in teaching and research laboratories.

Teaching, Curriculum & Student Success

- Physical renovation of all the general chemistry laboratories was started in 2016 and the first laboratory, 3029 SEL, was completely renovated in time for the start of classes in F17.
- Oversaw expansion of the Science Learning Center to improve problem solving skills across various courses, especially general chemistry.
- Implemented more instructional training of TAs, now a permanent part of their training program.
- Encouraged improved coordination of student advising between Director of Undergraduate Studies, the Director of General Chemistry, and the LAS student advisors.
- Reinstated a departmental limit of 250 student maximum per lecture.
- Chem 101, pre-college chemistry, was converted into a preparatory course for general chemistry.
- The Summer Workshop for Incoming Freshman-Year Students was founded to prepare underperforming students for college level general chemistry.
- Supervised separation of lecture and laboratory in general chemistry after a multiyear approval process. Expected to reduce failure rates and increase laboratory section capacity.
- Various other improvements in general chemistry included better lecture coordination, implementation of online homework, new experiments, improved laboratory safety and operation, and online videos.
- Honors general chemistry, Chem 116/118, was revised to allow students to by-pass Chem 222.
- Chem 130, Survey of Organic Chemistry and Biochemistry, a pre-nursing course was overhauled. New laboratory exercises were developed that use computer and physical models to illustrate chemical structures. Was funded in 2014 by a NSF TUES grant to support these efforts.
- A new pre-health-focused sophomore organic course for non-chemistry majors, Chem 230, was developed and is tentatively scheduled to be taught beginning F18.
- Improved coordination between lecture sections and shared exams in Organic Chemistry I and II, Chem 232/234 have been implemented by the tenure track organic faculty.
- New laboratories in Chem 314, Inorganic Chemistry, including use of a new X-ray diffractometer.
- The Physical Chemistry Laboratory, Chem 343, was completely revamped in 2014 with new space, experiments, equipment, and instructional videos.

Staff Reorganization

- Maximize efficiency of the staff and rapidly to fill vacant positions while addressing the increasing number of university, state, and federal regulations and requirements imposed on the department.
- Oversaw an almost complete replacement of Chemistry's accounting staff.
- Hired new Director of the General Chemistry Stockroom in 2012, who subsequently overhauled operations, improved stockroom function, and met safety requirements.
- Reorganization of office staff.
- A joint East Campus stockroom was implemented with the Department of Biological Sciences to improve access to the stockroom. Serves as a model for consolidating services across units.
- The Chemistry machine shop was merged with that of Physics and two new machinists were hired, creating efficiencies of scale while maintaining the full skill set of a large shop.

Resources: Prezista Funds, Differential Tuition & Adv. Chemical Technologies Building (ACTB)

- The top royalty earning invention at UIC or UIUC in recent years was the protease inhibitor Prezista, which has brought over \$50M in revenues to UIC. Prezista was invented by a former UIC chemist. Negotiated with LAS to spend most of unit share of revenues on start-up for new hires.
- Differential tuition funds that come directly to the department have mostly recently been used for the purchase of equipment and improvements in teaching laboratories.
- Revisited ACTB design in consultation with faculty, architects, and Capital Development Board.

Chemical Safety

- Safety standards in university chemistry departments are evolving nationally and Chemistry drastically improved how it addresses safety issues.
- Director of Laboratories had position redefined to explicitly include overseeing chemical safety. Supervises chemical safety officer.
- Department now has a laboratory safety committee composed of faculty and staff.
- Resolve long term safety issues in various abandoned laboratories.

Diversity

- The number of underrepresented minorities (URM) and women faculty in Chemistry grew from three in early 2010 to ten by F16.
- The undergraduate fraction of URM students increasingly reflects the UIC population as a whole.
- The graduate program in Chemistry has always had a large fraction of female students. However, African American and Hispanic/Latino graduate student populations in Chemistry are low compared to UIC as a whole (typical for US chemistry departments). Have used the Louis Stokes Alliance for Minority Participation (LSAMP) Bridge to the Doctorate, Lincoln Fellowships, MARC and departmental guarantee of TA support program to attract minority students and advance them toward the PhD. Work closely with graduate college to increase URM enrollments.
- Multiple underrepresent minorities received their Ph.D.s in Chemistry.
- Hired multiple underrepresent minorities as full time staff.

Other Service to UIC (Beyond Headship): Department, College & University

2017	Participant in UIC Faculty-Administrator Leadership Program
2016 - 2017	Advisory Board of Next Generation Electrochemistry (NGenE)
2016	Member, Search Committee for Vice Provost for Undergraduate Affairs
2016	Member, Search Committee for Director of IT, LAS
2013 - 2014	Member, Advanced Chemical Technologies Building Backfill Committee
2004 – 2016	Member, Research Resources Center's Executive Advisory Panel
2009 - 2014	Chair of Research Resource Center's Executive Advisory Panel
2011 - 2014	UIC Senate
2011	Scientific Review Board for the Chicago Biomedical Consortium (CBC)
2011	Member of Chicago Grassroots Advisory Board for U.S. Army 3 rd Medical Recruiting Battalion
2011 - 2014	Member of SEL Working Group
2010 - 2011	Member of VCR's Biomedical Discovery Advisory Council
2010	Member of LAS Academic Priorities Task Force
2009 - 2010	UIC Proteomics Faculty Position Recruitment Search Committee
2008 - 2010	WISEST Chemistry Facilitator
2009	Chair of Chemistry Department Laboratory Committee
2008 - 2009	Chancellor's Committee on Sustainability and Energy
2007 - 2008	Search Committee for Science Librarian
2007 - 2009	LAS Elections Committee
2006 - 2010	Chair of Chemistry Department Space and Facilities Committee
2005 - 2006	2010 Strategic Planning Committee for the College of Liberal Arts & Sciences
2005 - 2010	UIC Nanoscience Working Group
2005	Committee to Evaluate Future of Microfabrication Applications Laboratory
2004 - 2006	Planning Committee for Advanced Chemical Technologies Building
2002 - 2005	Campus Wide Promotion and Tenure Committee (Appointed by Provost)

Luke Hanley's CV

2002 - 2004	UIC Faculty Representative for Federal Demonstration Partnership Phase IV
1997 - 2010	Departmental Advisory Committee (not continuous)
1999 - 2004	Departmental Graduate Admissions Committee
2001 - 2003	Faculty member in charge of graduate recruiting for Chemistry Department
2001 - 2011	UIC Alternate Representative on CARS Board of Governors
2000 - 2015	Steering Committee for Institute of Environmental Science and Policy
2000 - 2001	Negotiated UIC Membership in Consortium for Advanced Radiation Sources (CARS) Collaborative Access Team at the Advanced Photon Source, Improving UIC Access to X-ray Synchrotron Radiation (with UIC Physics).
2000 - 2005	Mentor for Assistant Professor Scott Shippy
1996 - 2004	Research Resources Center Subcommittee for Mass Spectrometry
1992 - 2010	Member of Eight Faculty and Two Staff Search Committees (Headed Two)
2002	Participated in first UIC I-Emerge event as inventor
2002	Organized day long scientific meeting at UIC of Prairie Chapter of the American Vacuum Society and Illinois Section of the Electrochemical Society.
2002	UIC Microfabrication and Miniaturation Initiatives Committee
2001	Coordinated One-Day Short Course on Vacuum Technology in Chem 572 Continuing Education for High School Teaching with Prairie Chapter of the American Vacuum Society
1999 - 2004	Faculty Advisor and Mentor for Summer Research Opportunities Program and McNair Scholars Program for Minority Students
2000 - 2002	Campus Research Board Review Committee - Natural Science & Engineering
2000	Co-Wrote Graduate Education & Research Section for Chemistry Department Self-Study Report (with Robert Gordon)
1999	Attended UI President's Retreat in Urbana
1999	Speaker for Freshman Preview Day
1999	LAS Faculty Secretary
1997	Teaching Recognition Program Committee, Science & Engineering A Panel
1991 - 1993	Faculty Advisor to the Student Affiliates of the American Chemical Society

Other Service - Professional Activity and Government Panels

2014 - Present	Editorial Board, Biointerphases
2011 - 2015	Program Comm, Biomaterials Interf. Div., American Vacuum Society (AVS)
2009 - 2012	Editorial Board, Journal of Biomimetics, Biomaterials, and Tissue Engineering
2008 - Present	Participant in Study Sections for National Institutes of Health grant review
2002 - Present	Grant Reviewer for National Science Foundation (panel reviews since 2014)
2002 - 2006	AVS Surface Science Division Executive Committee
2007- 2009	National Research Council Board Asses. Panel: Chemical Science & Technol.
2002 - 2006	AVS Surface Science Division Executive Committee
2002	Organized Joint Meeting of AVS Prairie Chapter & Chicago Section of Electrochemical Society
1999 - 2002	Program Committee of Biomaterials Interfaces section of the AVS
1999	Co-organized ion-surface reactions session for 46 th Inter. Symp. of AVS, Seattle
1999 - 2007	Chair & Executive Committee of the Prairie Chapter of the AVS
1998 - 1999	ASTM Committee F04, Medical & Surgical Materials & Devices, 1998 – 1999
1999	International Journal of Mass Spectrometry and Ion Processes guest editor of Special Issue on Polyatomic Ion Surface Interactions
1996	Co-organizer of symposium on hyperthermal molecule-surface reactions for National Meeting of American Chemical Society, Orlando, FL

VII. Summary of International Interactions

2012 - 2016: Research Collaboration with National Physical Laboratory, London, UK

A postdoctoral researcher of Dr. Ian Gilmore visited laboratory to learn photoionization methods.

2012 - 2017: Research Collaboration with University of Helsinki, Finland

Worked with Faculty of Pharmacy of the University of Helsinki on atmospheric pressure photoionization methods. A Ph.D. student visited UIC and I served as the "Opponent" for her Ph.D. defense at the University of Helsinki in 2013. One joint publication.

Sep 2010 – Oct 2013: Research Collaboration with Prof. Sefik Suzer, Bilkent University, Turkey

Exchanged students and visited each other's laboratory to develop advanced methods in X-ray photoelectron spectroscopy. One joint publication.

Jun 2001: U.S. Young Observer to International Union of Pure and Applied Chemistry (IUPAC)

Selected to serve as a young observer to IUPAC during its 2001 meeting in Brisbane, Australia.

May 2000 – Jun 2011: Collaboration with Charles University, Prague

Exchanged students and visits supported by funding from NSF and the Czech government. Collaboration on ion-surface modification ran for over a decade and resulted in nine joint publications, conference proceedings, and book chapters.

Apr 1998 – Jun 2001: Collaboration with Univ. of New South Wales, Australia

Research collaboration begun during sabbatical. Three joint publications.

Jan 1998 – May 1998: Sabbatical at the University of Technology, Sydney, Australia

Sabbatical funded by a grant from the U.S. National Science Foundation International Division. Three joint publications.

VIII. Invited Lectures & Contributed Presentations

Contributed Conference Posters & Talks – 206 total (not listed here)

Invited Lectures (only lectures since 2015 are listed, out of 103 total)

103. "VUV Postionization with fs-Laser Ablation: Implications for SNMS", SIMS 21, 14 September 2017, Krakow, Poland.
102. "Cluster Beam Deposition of Inorganic-Organic Composite Films", Chemistry Division, National Science Foundation, 1 March 2017, Arlington, VA.
101. "Nanostructures on Surfaces: From Cluster Deposition to Low Energy Ion Irradiation", International AVS Symposium and Exhibition, 6-11 November 2016, Nashville, TN.
100. "Mass Spectrometry Imaging using Laser Ablation: From Ultrashort Pulses to Portable Instruments", Medtronic, 8 December 2015, Fridley, MN.
99. "Mass Spectrometry Imaging using Laser Ablation: From Ultrashort Pulses to Portable Instruments", Minnesota Chapter of the AVS, 7 December 2015, St. Paul, MN.
98. "Mass Spectrometry Imaging using Laser Ablation: From Ultrashort Pulses to Portable Instruments", 17 November 2015, University of Rostock, Rostock, Germany.
97. "Advances in Mass Spectrometry Imaging of Biointerfaces using Femtosecond Lasers and Postionization", 25th Annual BioInterface Workshop & Symposium, 21-23 September 2015, Scottsdale, AZ.
96. "Mass Spectrometry Imaging using Femtosecond Lasers and Postionization", National Physical Laboratory, Teddington, UK, 28 April 2015.
95. "Mass Spectrometry Imaging using Femtosecond Lasers and Postionization", Florida International University, Dept. of Chemistry, Miami, FL, 17 April 2015.