

Kellen Sorauf

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Professional Experience

Assistant Professor of Data Science, Program Director, and Data Director (08/2018 – Present)

Regis University, Denver, CO

- Manage Master of Data Science program, hire affiliate faculty, program and course evaluation, schedule classes.
- Developed and taught deep learning computer vision course, statistical courses, introductory data science courses, and data visualization courses.
- Established undergraduate data science certificate and minor program consisting of four data science courses.
- Performed report writing using Python and Informer for Anderson College of Business and Computing assisting in scheduling, marketing, retention efforts for over 25 degree programs and 2,400 students.
- Implemented a program exit survey for MSDS/MSDE program to identify program strengths and weaknesses.
- Gathered and analyzed student and faculty data for national ranking surveys.

Laboratory Manager/Lecturer

(08/2012-08/2018)

Regis University, Denver, CO

- Teaching the lecture and associated laboratory courses for analytical chemistry, quantitative chemistry, general chemistry, and introductory chemistry including writing of lecture materials, exams, and classroom demonstrations
- Developed new experiments for analytical chemistry, quantitative analysis and general chemistry laboratories
- Advise undergraduate students on research projects that were presented at national and local conferences
- Manage and supervise work study employees on preparing laboratory solutions and experiments, and keeping a safe and organized chemical stockroom
- Organize and manage stockroom and chemical purchases for the chemistry department
- Manage \$42,000/year budget
- Instrument upkeep and maintenance including: Waters and Agilent HPLCs, Thermo Scientific GC-MS, Aminco Bowman and Olis fluorometers, Shimadzu and Beckman UV-Vis, Thermo Scientific AAS, Thermo Scientific FT-IR ATR, Varian 60 MHz NMR
- TA evaluations available upon request
- Faculty advisor to Regis University Chemistry Club. Our club has received an honorable mention by ACS in 2016, 2017, and 2018

Denver Public Schools Summer Teacher Institute Instructional Teacher

(2011 - 2012)

University of Denver, Denver, CO

- Assisted in the development and co-led a professional development workshop for K-8 teachers
- Created inquiry based activities where teachers applied scientific notebooking techniques to engaging science scenarios

Graduate Teaching Assistant

(08/2007 – 08/2011)

University of Denver, Denver, CO

- Taught General Chemistry Labs (5 quarters), Organic Chemistry Labs (4 quarters), Analysis of Equilibrium Systems Labs (4 quarters), and Instrumental Analysis Chemistry Labs (4 quarters)
- Responsibilities included: supervising bi-weekly 3-hour long labs, writing and giving weekly 10-15min prelab lectures, grading lab reports, managing grades, and holding weekly office hours
- TA evaluations available upon request

Research

Regis University Anderson College of Business and Computing

(08/2017-Present)

- 2019 Go Code Colorado – Partnered with Colorado Democratic Campaign to build a dashboard that predicts the racial and ethnic makeup of Colorado voters in the Denver Metro area. Runner up for grand prize

- Smart Data Analytics Challenge – Addressing Colorado’s Critical Issues competition. Submitted natural language processing and multiple linear regression analysis to model water usage in Denver. Won best analysis in the Water Supply Division.

Regis University Department of Chemistry and Biochemistry (2013-2017)

- Characterizing dissolved organic matter in local lakes and streams through excitation and emission fluorescence spectroscopy and parallel factor analysis
- Quantifying and recycling precious metals from printed circuit boards. Developed methods for quantifying and recycling precious metals from printed circuit boards
- Determination of vitamins in multivitamin dietary supplements through HPLC
- One Hop flavoring in beer through GC-MS and chemometric analysis. Used GC-MS and chemometric analysis to identify flavoring molecules in beer
- Spectral data analysis approaches for improved provenance classification. Built chemometric models of spent bullet cartridges for province classification of manufacture and country of origin)
- Laser-induced breakdown spectroscopy and spectral analysis of improvised explosive materials. Built chemometric models to identify improvises explosives at standoff distances

Graduate Research Assistant University of Denver (2008 – 2013)

- Developed a hydrodynamic method for determining dispersed aqueous nanoparticle binding constants with small organic molecules
- Assisting in the development of a field portable carbon soil analyzer
- Applying partial least squares multivariate calibration curve method on 100 agricultural soils samples collected throughout North America

Instrumentation and Software Skills

- MATLAB, R, and Python, Keras, Tensorflow, PowerBI, deep learning, machine learning, artificial intelligence, neural networks,
- Proficient in HPLC, AA, GC, MS, ITC (isothermal calorimetry), SIBS and LIBS (spark/laser induced breakdown spectroscopy), UV-Vis, FIA, and FTIR instrumentation

Education

- **University of Denver, Denver, CO (2007 – 2012)**
Ph.D. Department of Chemistry and Biochemistry
Dissertation title: “A hydrodynamic method for determining nanoparticle surface interactions” Advisor: Keith E. Miller
- **Humboldt State University, Arcata, CA (2002 – 2006)**
B.S. General Chemistry
Senior project: “Uranium-Uranium quintuple bonds and the naked dimer”

Publications

- **Kellen J. Sorauf;** Amy J. R. Bauer; Andrzej W. Miziolek; Frank C. De Lucia “Spectral data analysis approaches for improved provenance classification” *SPIE 9482, Next-Generation Spectroscopic Technologies VIII, 948212* (3 June 2015)
- Amy J. R. Bauer; Michael P. Farrington; **Kellen Sorauf;** Andrzej W. Miziolek, “Laser-induced breakdown spectroscopy and spectral analysis of improvised explosive materials” *SPIE Proceedings 9101 Next-Generation Spectroscopic Technologies VII 91010M* (May 21 2014)
- **Sorauf, K. J.,** Connors, D.E., Wells, T. E., Miller, K. E., " A hydrodynamic method for the measurement of Laponite-RD caffeine binding" *Journal of Applied Clay Science 87, 197-204* (2014)
- Schmidt, M. S., **Sorauf, K. J.,** Miller, K. E., Sonnenfroh, D., Wainner, R., and Bauer, A. J. R. “Spark-induced breakdown spectroscopy and multivariate analysis applied to the measurement of total carbon in soil” (2012) *Applied optics 51, B176-182*

Presentations

- Catherine Virgil, Sarah Pribil, **Kellen J. Sorauf** "Characterizing dissolved organic matter in surface waters through excitation-emission fluorescence spectroscopy and parallel factor analysis." 255th American Chemical Society National Meeting, New Orleans, LA March 18-22, 2018.
- Angela Vu, Sarah Pribil, **Kellen J. Sorauf** "Determination of vitamins in multivitamin dietary supplements through HPLC" 253rd American Chemical Society National Meeting San Francisco, CA April 2 -6 2017
- Sarah Pribil, **Kellen J. Sorauf** "Developing an active and engaged Chem Club" 253rd American Chemical Society National Meeting San Francisco, CA April 2-6 2017
- Jolee Espinosa, **Kellen J. Sorauf** "Hop flavoring in beer through GC-MS and chemometric analysis" 251st American Chemical Society National Meeting San Diego, CA March 13 -17 2016
- Sherri Fields, Christopher Rector, **Kellen J. Sorauf** "Quantifying and recycling precious metals from printed circuit boards: An undergraduate laboratory" 249th American Chemical Society National Meeting Denver, CO March 22 -26 2015
- Bauer, A.J.R., Farrington, M.P., **Sorauf, K. J.**, M. F., Miziolek, A. W., "Improved Explosives and Precursor Identification with LIBS" *Laser Applications to Chemical Security and Environmental Analysis (LACSEA)* July 13-17th 2014 Seattle, WA
- **Sorauf, K. J.**, "Distribution Coefficient of Nitrogen Heterocycles on Nanoparticles in Aqueous Systems Using Multivariate Curve Resolution" *Materials Challenges for Next-Generation Water Treatment NIST* October 27-28th 2011 Boulder, CO
- **Sorauf, K. J.**, Miller, K. E., and Wells, T. A. "Distribution coefficient of nitrogen heterocycles on clay mineral colloids using multivariate curve resolution" (2011) *Abstract Pap. Am. Chem. Soc.* 242 Denver, CO
- **Sorauf, K. J.**, Connors, D.E., Wells, T. E., Miller, K. E., "Distribution Coefficient of Pharmaceuticals on Clay Mineral Nanoparticle Using Multivariate Curve Resolution" *6th Annual Eigenvector University* May 15-20 2011 Seattle, WA *First place for best poster*
- **Sorauf, K. J.**, Connors, D.E., Wells, T. E., Miller, K. E., "Characterization of Nanoparticles and Nitrogen Heterocycles by Hydrodynamic Chromatography 23rd" *Annual Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry* April 16th 2010 Denver, CO
- **Sorauf, K. J.**, Connors, D.E., Wells, T. E., Miller, K. E., "Characterization of Nanoparticles and Colloids by Hydrodynamic Chromatography" *51st Rocky Mountain Conference on Analytical Chemistry* July 19-23 2009 Snowmass, CO
- **Sorauf, K. J.**, Connors, D.E., Miller, K. E., "Apparatus for Determining Distribution Coefficients of Nitrogen Heterocycles on Nanoparticles and Colloids" *17th Symposium on Thermophysical Properties* June 21-26 2009 Boulder, CO
- **Sorauf, K. J.**, "Apparatus for Determining Distribution Coefficients of Nitrogen Heterocycles on Nanoparticles" *Nanoscale Science and Engineering Center First Graduate Symposium* May 26th 2009 Denver, CO

Grant Awards

- \$2000 IDT TLTM Grant: Swivl Video Recording and Live Streaming for Blended and Online Classrooms micro grant for a SWIVIL device (2019)
- \$1300 Western Alliance to Expand Student Opportunities (2019)
- \$5200 Western Alliance to Expand Student Opportunities (2018)

Referee

- Western Alliance to Expand Student Opportunities Grants (2018-Present)
- Applied Clay Science (2018)

Service

- Data Mentor for 2021 Go Code Colorado competition (2021)
- Regis University Faculty Mentor (2020 -2021)
- Volunteered as a Judge in the 1st Tech Challenge Robotics State Competition (2019)
- Served as on the Four College Handbook Committee (2018-2021)
- Chair of CCIS faculty forum and CCIS faculty representative to provost council (2019-2020)
- CCIS representative on Diversity Council (2019-2020)
- Regis Chem Club faculty advisor (2016-2018)