CURRICULUM VITAE

Fern M. Caka

Chemistry Department, Utah Valley University 800 W. University Parkway, Orem, UT 84058 (W) (801) 863-8581 (C) (801) 489-3147 FernC@uvu.edu

EDUCATION

Ph.D.	Analytical Chemistry, Brigham Young University	1993
M.S.	Analytical Chemistry, Brigham Young University	1990
B.A.	Chemistry, Brigham Young University	1987

APPOINTMENTS

Current Positions

 Chair, UVU Chemistry Department 	Jan 2015-present
 Professor, UVU Chemistry Department 	2018- present

Previous Positions

• Visiting Research Faculty, Department of Chemistry and Biochemistry, BYU	Jan 2014 – Dec 2014
 Associate Professor, Utah Valley University 	2006 – 2017
 Assistant Professor, Utah Valley State College 	2001 – 2006
 Lab manager / instructor Utah Valley State College 	1999 – 2001
 Meridian School, part-time high school chemistry / physics teacher 	1998 – 2001
 Adjunct faculty, UVSC Chemistry Department 	1995 – 1999

AWARDS AND HONORS

 Best Online Course Design (CHEM 1110 online), 	
2 nd Place, UVU Office of Teaching and Learning	Mar 2019
 Dean's Award: College of Science and Health, Excellence in Teaching 	2013
 Chemluminary Award for the Outstanding Local Section of the Year by the An Society (served as Chair of the local ACS section) 	nerican Chemical 2006
Outstanding High School Chemistry Teacher, Central Utah Section of the ACS	S 2001
Albert E. Swenson Outstanding Graduate Student Award, BYU Chemistry De	partment 1989
PROFESSIONAL ACTIVITIES:	
 Sabbatical, Brigham Young University, Dr. Jaron Hansen's lab 	Jan 2014 – Dec 2014
 Member of the American Chemical Society (ACS) 	2001 – present
Chair, ACS Central Utah Section	2006
COURSES TAUGHT AT UVU	Since 2001

CHEM 1010	Introductory Chemistry
CHEM 1110	Elementary Chemistry

CHEM 1110 OnlineElementary Chemistry (Developed new course)CHEM 1115Elementary Chemistry lab (Wrote lab manual)CHEM 1210General Chemistry 1CHEM 1215 & CHEM 1225General Chemistry labs (taught as adjunct prior to 2001)CHEM 3020Environmental ChemistryCHEM 4920, 4930,4940Capstone seriesCHEM 489R & 490RUndergraduate research and independent study supervision	CHEM 1110 Hybrid CHEM 1110 Online CHEM 1115 CHEM 1210 CHEM 1215 & CHEM 1225 CHEM 3020 CHEM 4920, 4930,4940 CHEM 489R & 490R	Elementary Chemistry (Developed new course) Elementary Chemistry (Developed new course) Elementary Chemistry lab (Wrote lab manual) General Chemistry 1 General Chemistry labs (taught as adjunct prior to 2001) Environmental Chemistry Capstone series Undergraduate research and independent study supervision
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SERVICE AND EDUCATIONAL ACTIVITES:

 UWLE (USHE Women Leadership Exchange) inaugural Cohort member 	2019-2020
• Presenter: David R. Keller Environmental Ethic Symposium: The Air We Breathe	Mar 2019
 Faculty Mentor, Center for Social Impact: 	
Alternative Spring Break at the Grand Canyon	Mar 2019
• Title IX panelist	Spring 2019
 Online Teaching Certification, UVU 	Feb 2019
• Various Outreach Events Since full-time er	nployment at UVU
Co-Chair, Presidential Transition Committee, UVU	ec 2017 – Oct 2018
• Recently Completed Office of Teaching and Learning (OTL) Circles and other even	nt participation
Technology Conference	Spring 2019
Online Academy Awards, awardee	Spring 2019
Discussion-Based Online Teaching to Enhance Student Learning:	
Theory, Practice and Assessment	Fall 2018
Technology Conference	Spring 2018
Blended Learning	Fall 2017
Facilitating Seven types of learning	Fall 2017
 "Crucial Conversations" Training 	Fall 2017
University Committee to develop policy on Administrative Faculty (Policy #656)	
• Flex Studio, Office of Teaching and Learning, development of hybrid CHEM 1110	Fall 2016
 UVSELF (Utah Valley Senior Executive Leadership Forum) Graduate 	2015 – 2016
 College of Science and Health Scholarly Activities Committee 	2014 – 2017
 Served as committee member or committee search chair (or Department Chair*) for staff hires since joining the Chemistry department in 2001: Cunningham*, Chamb Halling, Ham, Heaton, Herron*, Horn, Laricheva*, Leri*, Moore, Peterson (Advisor) Shurtleff, Tamrakar, Uluave, Wathen, White, Yeh, and Yu* 	or 21 faculty and erland*, Goldfarb*, , Petrucci*, Rocks*
 College of Science and Health Faculty Excellence Award Committee 	2014 – 2016
Pope Science remodel committee	2015 – 2016
Scholarly Activity Committee	2013 – 2016
 NMR and Mass spectrometer acquisition and room remodel committee 	2016

GRANT AWARDS

Co-PI NSF S-Stem Grant (\$999,826): Award Number: 1742504 Promoting Engagement in Chemistry, Physics, and Earth Sciences	ec 2017- present
 UVU of Science and Health SAC award (\$700) air pollution research 	2015
 Dry Creek Charity (\$7916). Grant to purchase PM2.5 instrument 	2015
 UVU College of Science and Health SAC award (\$2500) FTIR rate kinetic experime 	ents 2014
• USTAR Grant (\$40,000)	
Development of a Biogas Conditioning System. Collaboration, Dr. Jaron Hanse	en, BYU 2010
 American Chemical Society Grant (\$500) and UVUCEL Grant (\$2000) Science Café' (community outreach/education) 	2007
RECENT CONFERENCE ATTENDENCE	
 American Chemical Society National Conference Met with Chemical Education Committee for accreditation review 	Apr 2017
RECENT PRESENTATIONS	
 Panelist: UVU Environmental Ethics Symposium on Air Pollution 	Mar 2019
Invited Speaker: Inspired Leadership Series, UVU Center for Advancement of Lead	dership Mar 2019
Designing Interactive Activities with Qualtrics	
UVU Technology Conference	Feb 2019
 Research in the Himalaya: Burning Yak Dung and MegaQuake: Utah Valley University Chemistry Department Seminar 	Apr 2016
 Indoor PM2.5 Concentrations in Remote Himalayan Villages International Women of the Mountains Conference, UVU 	Mar 2016
 Implementation of interactive response system technology in chemistry Turning Technologies National Conference, Las Vegas, NV 	Oct 2009

RECENT PUBLICATION:

 "Use of a GC-MS Organic Aerosol Monitor for In-Field Detection of Fine Particulate Organic Compounds in Source Apportionment". Paul M Cropper, Delbert J Eatough, Devon K Overson, Jaron C Hansen, Fern Caka, and Robert A Cary. Journal of the Air and Waste Management Association, Volume 62, Issue 38 Oct 2017

OTHER PUBLICATION

• CHEM 1115 lab manual

Lab manual containing 10 (ten) laboratory experiments made available in PDF format free of charge for all students who enroll in the 1115 lab. Saved approx. 1000 students the cost of purchasing a lab manual for this course.

RESEARCH:

Rocky Mountain Elementary School (Lindon, UT) Air Pollution Study
 2015 - 2016
 Measurements of ambient concentrations of PM1 and PM2.5 associated with vehicular traffic during pick up and drop off of students during winter inversions. Nick Ellsworth, Delbert Eatough, and Fern Caka, Presented at Chemistry Department seminar, April 2016

2010

- Indoor air quality study in Khumbu region of Nepal May 2015 Measured concentrations of PM2.5, CO, and CO₂ in cooking and living areas of several Sherpa lodges and homes in several villages in the region. Manuscript in preparation.
- Sabbatical, BYU, collaboration with Dr. Jaron Hansen.
 Source apportionment using Positive Matrix Factorization of constituents of PM2.5 during winter inversions, Jan 2014 Mar 2014 and Dec 2014 March 2015.
- Collaboration with Jaron Hansen, BYU

Effectiveness of a bio-gas conditioning system in the removal of acid gases from feedlots and landfills. Findings presented at the National Conference for Undergraduate Research (NCUR) by Lucas Lloyd, UVU student 2011 - 2013

- Bio-diesel research project, collaboration with Auto Trades Department
 Facilitated the participation of two UVSC environmental chemistry students Utah Valley State
 College in conjunction with their Auto Trades Department. Findings presented at the Utah
 Conference for Undergraduate Research
 Spring 2007
- Indoor air PM_{2.5} study in Mexican kitchens, Tamaula Mexico, collaboration with Joel Bradford, UVSC Indoor air quality study conducted in a small, rural village, in conjunction with a socio-economic study done by University of Utah anthropology graduate students. Findings presented Society for Applied Anthropology Conference, Vancouver, Canada, by Joel Bradford April 2006 May 2005
- Project MOHAVE ambient air sampling program in the Grand Canyon region.
 Responsible for field collection of samples, and subsequent data analyses and interpretation of sulfur oxide concentrations which occurred in the region. Ph.D. Dissertation
 1992 1994
- Developed and implemented an ambient air sampling program to measure pollutant levels during winter inversion conditions in Utah Valley. Ph.D. Dissertation 1991
- Developed a model to predict exposure to environmental tobacco smoke (ETS) onboard commercial aircraft. Data for the model was obtained by development, testing and implementation of an automated, self-contained briefcase sampling system used aboard commercial aircraft to assess exposure to ETS and other non-specific pollutants. MS Thesis, BYU

OTHER SELECTED PUBLICATIONS

- FM Caka, L Lewis, DJ Eatough and NL Eatough, "The Formation of Sulfate in the Desert Southwest During Project MOHAVE," *Proceedings of the 1994 Air and Waste Management International Specialty Conference on Aerosols and Atmospheric Optics: Radiative Balance and Visual Air Quality,* 26-30 September, 1994, Snowbird, Utah.
- DJ Eatough, JM Joseph, **FM Caka**, B Sun, L Lewis, NF Mangelson, M Eatough, NL Eatough, RJ Farber and JG Watson, **"Regional Source Profiles of Sources of SO_x at the Grand Canyon During Project MOHAVE,"** *Proceedings of the 1994 Air and Waste Management International Specialty Conference on Aerosols and Atmospheric Optics: Radiative Balance and Visual Air Quality,* 26-30 September, 1994, Snowbird, Utah.
- NL Eatough, M Eatough, JM Joseph, **FM Caka**, L Lewis and DJ Eatough, **"The Determination of SO_x and SAS Particles and F_{Total} as Endemic Tracers of SO_x Using Diffusion Denuder and High**

Volume Impactor Sampling Systems During Project MOHAVE," *Proceedings of the 1994 Air and Waste Management International Specialty Conference on Aerosols and Atmospheric Optics: Radiative Balance and Visual Air Quality,* 26-30 September, 1994, Snowbird, Utah.

- DJ Eatough, **FM Caka**, and RJ Farber, "The Conversion of SO₂ to Sulfate in the Atmosphere," *Israel J. Chem.*, 1994.
- FM Caka, "Studies in Atmospheric Chemistry: I. Assessing Exposure to Environmental Tobacco Smoke, II. SO_x Chemistry related to PM₁₀ Formation and Visibility Degradation", Dissertation, Brigham Young University, August 1993.
- FM Caka, LJ Lewis and DJ Eatough, "Particulate Sulfate and SO₂ in the Grand Canyon Region During Project MOHAVE," *Proceedings*, 86th Annual Meeting and Exhibition of the Air & Waste Management Association (A&WMA), Denver, CO, June 13-18, 1993.
- FM Caka, EA Lewis and DJ Eatough, "Sulfate and Nitrate Formation in Utah Valley During Winter Inversions," *Proceedings*, 85th annual meeting of the A&WMA, Kansas City, Missouri, June 21-26, 1992.