Samuel Louis Kleinman, Ph.D. F-ABFT TC-NRCC
Cincinnati, OH • 505-596-0212

EDUCATION/CERTIFICATION

Fellow – American Board of Forensic Toxicology 2023-present
Board certified in Forensic Toxicology
Eligible by CLIA, CMS, & HHS to be a High Complexity Laboratory Director

Toxicological Chemist – National Registry of Certified Chemists 2024-present
Board certified in Toxicological Chemistry
Eligible by CLIA, CMS, & HHS to be a High Complexity Laboratory Director

Northwestern University, Evanston, IL 2007-2012
Ph.D. in Physical/Analytical Chemistry
Thesis title: Surface-Enhanced Raman Spectroscopy of Single Molecules and Nanoaggregates
Advisor: Professor Richard P. Van Duyne

Kellogg School of Management, Northwestern University, Evanston, IL 2010
Certificate: Management for Scientists and Engineers
8-week course on fundamentals of business and management

University of California at Berkeley, Berkeley, CA 2003-2007
B.S. in Chemistry

CAREER EXPERIENCE

SamHil Consulting 2022-current
Cincinnati, OH / Albuquerque, NM
Principal Consultant
Offers services as an expert in forensic toxicology and instrumental analysis
Provides testimony and consultation on criminal and civil matters
Drafts and submits reports on facts, opinions, and conclusions
Reviewer for scholarly journals in the field
Assists in explaining laboratory results and placing them in appropriate context
CLIA High Complexity Laboratory Director candidate

New Mexico Department of Health, Scientific Laboratory Division, Toxicology Bureau 2017-2024
Albuquerque, NM
Forensic Toxicology Bureau Chief 2019-2024
Deputy Forensic Toxicology Bureau Chief 2017-2019
Managed breath alcohol, drug screening, and drug confirmation sections
Qualified as an expert in Forensic Toxicology more than 40 times
Testified in Federal, District, Magistrate, and Municipal courts of New Mexico
Developed training materials and training plans for onboarding new analysts
Participated in senior staff meetings, budget planning, and decision making
Performed technical and administrative review on DUI casework
Implemented ISO 17025 / AR 3125 guidelines and ensured laboratory conformance
Oversaw external laboratory accreditation for blood alcohol analysis
Oversaw laboratory accreditation with the American Board of Forensic Toxicologists
Hired more than 40 chemist and supervisor personnel

OndaVia, Hayward, CA 2013-2017

Senior Scientist / Operations Director

Created new tests for rapid trace chemical analysis in industrial water samples
Employed surface treatments to modify bulk properties of nanoparticle substrates
Optimized surface-enhanced and normal Raman spectroscopy for sample quantification
Trained and worked with industrial users to conduct novel SERS-based chemical assays
Utilized Python and SQL to manage and analyze data as well as perform chemometrics
Authored SOPs, safety manuals, SBIR grants, and customer reports

Northwestern University, Evanston, IL

Research Associate/Postdoctoral Fellow 2012-2013

Designed experiments for transcutaneous detection of peptides and small biomolecules
Sourced and assembled confocal Raman microscope

Graduate Student 2007-2012

Mastered nanoparticle and single-molecule SERS, electrochemical SERS
Utilized LabVIEW and MATLAB to conduct and analyze experiments

Analytical Services Laboratory Assistant 2007-2008

Maintained and trained new users of GC, GC-MS, HPLC-MS, LCQ, ICP, FTIR equipment

University of California, Berkeley, Berkeley, CA 2005-2007

Undergraduate Research Internship

Growth and analysis of CdSe semiconductor nanoparticles

PROFESSIONAL MEMBERSHIPS & COMMITTEES

Society of Forensic Toxicologists, Full Member 2019-current

Society of Forensic Toxicologists Publications Committee 2025-current

Southwestern Association of Toxicologists 2020-2024

PROFESSIONAL MEETINGS

American College of Medical Toxicologists, Forensic Toxicology Seminar 2019

Society of Forensic Toxicologists, Annual Meeting 2018, 2019, 2021, 2023, & 2024

American College of Medical Toxicologists, Annual Scientific Meeting 2018

California Association of Toxicologists Semi-Annual Meeting 2017

TRAINING MODULES & CLASSES

Intoxilyzer 9000 Breath Alcohol Analysis Instrument Operation, Maintenance, & Calibration 2023
Presented by CMI, Inc. and hosted at SLD

Pretrial Interview Training and Listening Session 2022
Presented on 3 occasions by Samuel Kleinman at SLD

Seminar in Forensic Toxicology: A Look Forward at NPS & a Look BAC at Ethanol 2021
16-hour course presented by the American College of Medical Toxicologists

Interpretation of Forensic Toxicology Results Around the Globe and Into the Future 2021
3-hour webinar presented by the Society of Forensic Toxicologists/TIAFT

Analytical Toxicology for Novel Psychoactive Substances 2021
Administered by International Society for the Study of Emerging Drugs

Applied Pharmacokinetics, 15-hour online course 2020
Administered by Center for Forensic Science Research and Education

The Robert F. Borkenstein Course on Alcohol and Highway Safety 2018

The Robert F. Borkenstein Course on The Effects of Drugs on Human Performance and Behavior 2017

Forensic Pharmacology, 3-day online course 2017
Administered by Center for Forensic Science Research and Education

Intoxilyzer 8000 Breath Alcohol Analysis Instrument Operation, Maintenance, & Calibration 2020
Presented by CMI, Inc. and hosted at SLD

2020 Online Symposium: Current Trends in Forensic Toxicology, 15-hour online course 2020
Administered by Center for Forensic Science Research and Education

New Mexico Drug Recognition Expert Workshop and Demonstration 2019
Presented by NMDRE State coordinator and hosted by Samuel Kleinman

Thermo Scientific Unity Orbitrap Training, 3-day intensive course 2018
On-site at New Mexico Scientific Laboratories

Session I: The synthetic Drug Crisis – Identifying NPS in Forensic Casework 2018
Webinar hosted by National Institute of Justice

Essentials for Supervisors, 4-day intensive course 2018
Hosted by David Markwardt Consulting at NMDOH

PUBLICATIONS/PATENTS

Kleinman, S. L.; Peterman, M. C.; Benhabib, M.; Cheng, M. T.; Hudson, J. D.; Mohler, R. E. "Rapid Quantification of 4,4'-Methylenedianiline by Surface-Enhanced Raman Spectroscopy" *Anal. Chem.*, 2017, 89, 13190—13194

Kleinman, S. L.; Frontiera, R. R.; Henry, A.-I.; Dieringer, J. A. and Van Duyne, R. P. "Creating, characterizing, and controlling chemistry with SERS hot spots" *Phys. Chem. Chem. Phys.*, 2013, 15, 21—36

Kleinman, S. L.; Sharma, B.; Blaber, M.G.; Henry, A.-I.; Valley, N.; Freeman, R. G.; Natan, M. J.; Schatz, G. C. and Van Duyne, R. P. "Structure Enhancement Factor Relationships in Single Gold Nanoantennas by Surface-Enhanced Raman Spectroscopy" *J. Am. Chem. Soc.*, 2012, 135, 301—308

Benhabib, M.; Kleinman, S. L.; Peterman, M.C. "Quantification of Amines in Refinery Process Waters via Surface-Enhanced Raman Spectroscopy" *Energy Fuels*, 2023, 1881-1886

Benhabib, M.; Kleinman, S. L.; Peterman, M.C. "Quantitative Analysis of Triazine-Based H_2S Scavengers via Raman Spectroscopy" *Industrial & Engineering Chemistry Research*, 2021 *60*(44) 15936-15941

Fahrenbach, A. C.; Sampath, S.; Late, D. J.; Barnes, J. C.; Kleinman, S. L.; Valley, N.; Hartlieb, K. J.; Liu, Z.; Dravid, V. P.; Schatz, G. C.; Van Duyne, R. P.; Stoddart, J. F. "A Semiconducting Organic Radical Cationic Host-Guest Complex" *ACS Nano*, 2012, 6, 9964—9971

Kleinman, S. L.; Ringe, E.; Valley, N.; Wustholz, K. L.; Phillips, E.; Scheidt, K. A.; Schatz, G. C. and Van Duyne, R. P. "Single-Molecule Surface-Enhanced Raman Spectroscopy of Crystal Violet Isotopologues: Theory and Experiment" *J. Am. Chem. Soc.*, 2011, 133, 4115—4122

Paxton, W. F.; Kleinman, S. L.; Basuray, A. N.; Stoddart, J. F. and Van Duyne, R. P. "Surface-Enhanced Raman Spectroelectrochemistry of TTF-Modified Self-Assembled Monolayers" *J. Phys. Chem. Lett.* 2011, 2, 1145—1149

Kleinman, S. L.; Bingham, J. M.; Henry, A-I.; Wustholz, K. L. and Van Duyne, R. P. "Structural and Optical Characterization of Single Nanoparticles and Single Molecule SERS" *Proceedings of SPIE*, 2010, 7757, 77570J-1—77570J-10

Wustholz, K. L.; Henry, A-I.; Bingham, J. M.; Kleinman, S. L.; Natan, M. J.; Freeman, R. G.; Van Duyne R. P. "Exploring Single-Molecule SERS and Single-Nanoparticle Plasmon Microscopy," In Plasmonics: Metallic Nanostructures and Their Optical Properties VII, *Proceedings of SPIE*, 2009, 7394, 739403-1–739403-10

Dieringer, J. A.; Wustholz, K. L.; Masiello, D. J.; Camden, J. P.; Kleinman, S. L.; Schatz G. C.; Van Duyne, R.P. "Surface-Enhanced Raman Excitation Spectroscopy of a Single Rhodamine 6G Molecule," *J. Am. Chem. Soc.* 2008, 131, 849—854

Peterman, M.C.; Benhabib, M.; Kleinman, S. L. "Portable Water Quality Instrument" US Patent Grant # 10247673, 10254229

Peterman, M.C.; Benhabib, M.; Ariza, C. A.; Kleinman, S. L. "Measuring concentration of analytes in liquid samples using surface-enhanced Raman spectroscopy" US Patent Grant # 9863824, 10444216

POSTERS

Kleinman, S. L.; Wustholz, K.; Valley, N.; Ringe, E.; Phillips, E.; Scheidt, K.; Schatz, G.; Van Duyne, R. P. "Isotope-edited Single-molecule Surface-enhanced Raman Spectroscopy of Crystal Violet," 240th ACS National Meeting; Boston, MA. 2010

Dieringer, J.; Wustholz, K.; Phillips, E.; Kleinman, S. L.; Scheidt, K. A.; R.; Van Duyne, R. P. "New Isotope-Edited Chromophores for Single-Molecule Surface-Enhanced Resonance Raman Spectroscopy," Materials Research Science and Engineering Center Annual Meeting; Evanston, IL. 2008

Wustholz, K.; Dieringer, J.; Kleinman, S.; Van Duyne, R. P. "Wavelength-Scanned Single-Molecule Surface Enhanced Raman Spectroscopy," Gordon Conference on Vibrational Spectroscopy; South Hadley, MA. 2008

SERVICE

Reviewer, Journal of Analytical Toxicology	2021-current
Reviewer, Journal of the American Chemical Society	2024
Member, NU Chemistry Department Graduate Liaison Committee	2008-2012
Participant, 'All Scout Nano-Day'	2008-2013
Organizer, 'All Scout Nano-Day'	2009