

Hakan Gürleyük, Ph.D.

Technical Director

Education	Ph.D. Analytical Chemistry, <i>University of Massachusetts</i> , 2000 M.Sc. Chemistry, <i>Sam Houston State University</i> , 1996 B.Sc Chemistry, <i>Bogazici University</i> , 1994
Employment	Technical Director, <i>Brooks Applied Labs</i> , 2015-Present Senior Scientist, <i>Applied Speciation</i> , 2005-2015 Research Scientist, <i>Frontier Geosciences</i> , 2000-2005
Patents	Gerads, Russell, Gurleyuk, Hakan, Meyer, Jacob. 2013. "Method for determining human cobalt and metal binding capacity" U.S. Patent Application 61816391. Patent Pending. Gerads, Russell, Gurleyuk, Hakan, Meyer, Jacob. "Method for Determining Free Ionic Cobalt and other Cobalt Bearing Molecules in Human Bodily Fluids using Ion Chromatography Size Exclusion Chromatography Coupled to an Inductively Coupled Plasma Mass Spectrometer" U.S. Patent Application 61868325. Patent Pending.
Affiliations	Member of the Editorial Board for Environmental Forensics Journal 2006 - Current.
Publications	Orhan Gunduz, Coskun Bakar, Celalettin Simsek, Alper Baba, Alper Elci, Hakan Gurleyuk, Merdiye Mutlu, Ayse Cakir, (2014) "Statistical Analysis of Causes of Death (2005–2010) in Villages of Simav Plain, Turkey, With High Arsenic Levels in Drinking Water Supplies" Archives of Environmental & Occupational Health Volume 70, Issue 1, 35-46 Orhan Gunduz, Hakan Gurleyuk, Ayse Cakir, Alper Elci, Alper Baba, Celalettin Simsek (2013) "Sample Collection into Sterile Vacuum Tubes to Preserve Arsenic Speciation in Natural Water Samples" Journal of Environmental Engineering 08/2013; 139(8):1080-1088 Brent D Kerger, Russell Gerads, Hakan Gurleyuk, Kerry A Thuett, Brent L Finley, Dennis J Paustenbach (2013) "Cobalt speciation assay for human serum, Part I. Method for measuring large and small molecular cobalt and protein-binding capacity using size exclusion chromatography with inductively-coupled plasma mass spectroscopy detection" Toxicological and environmental chemistry 04/2013; 95(4):687-708.

Deborah M Proctor, Mina Suh, Lesa L Aylward, Christopher R Kirman, Mark A Harris, Chad M Thompson, Hakan Gürleyük, Russell Gerads, Laurie C Haws, Sean M Hays (2012) "Hexavalent chromium reduction kinetics in rodent stomach contents" *Chemosphere* 06/2012; 89(5):487-93.

Kanna Ito, Walter Goessler, Hakan Gürleyük, Brian Wels, Christopher D. Palmer, Mary Frances Verostek, Patrick J. Parsons (2011) "An interlaboratory study of arsenic speciation analysis of whole blood" *Journal of Analytical Atomic Spectrometry* 09/2011; 26(9):1740-1745

Yamily J. Zavala, Russell Gerads, Hakan Gürleyük and John M. Duxbury, (2008) "Arsenic in Rice: II. Arsenic Speciation in USA Grain and Implications for Human Health" *Environ. Sci. Technol.*, 42 (10), pp 3861–3866

Pace, M.N., Mayes, M.A., Jardine, P.M., McKay, L., Yin, X., Melhorn, T.L., Liu, Q., Gürleyük, H., (2007) "Unraveling the Fate and Transport of Sr²⁺ and SrEDTA²⁻ in the Hanford Vadose Zone" *Journal of Contaminant Hydrology* Volume 91, Issues 3-4, Pages 267-287

O'Connor, R., O'Connor, M., Irgolic, K., Sabrsula, J., Gürleyük, H., Brunette, R., Howard, C., Garcia, J., Brien, J., Brien, J., and Brien, J., (2005) "Transformations, Air Transport and Human Impact of Arsenic from Poultry Litter" *Environmental Forensics*, 6:83-89, 2005

Hollibaugh, J.T., Vasquez, L., Leclerc, G., Carini, S., Joye, S.B., Jellison, R.E., Gürleyük, H. & Wallschläger, D. (2005) "Arsenic speciation in an alkaline, hypersaline, meromictic lake in response to the seasonal progression of water column stratification and redox conditions" *Geochim. Cosmochim. Acta*, Vol69, No. 8, pp. 1925-1937

Gürleyük, H. and Howard, C., Brunette, R.C., Schneider, C., Thomas, R. "Using Dynamic Reaction Cell ICP MS Technology to Determine the Full Suite of Elements in Rainwater Samples" *Spectroscopy*, January 2005

Garcia, J., Howard, C., Gerads, R., Hensman, C., and Gürleyük, H., (2004) "Speciation Analysis and its Role in Waste Treatment & Remediation Technology" *Proceedings of the 8th International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production*.

Hensman, C., Meyer, J., Kilner, P., and Gürleyük, H., (2004) "Trace-metal remediation strategies in complex matrices using organo-thiols" *Proceedings of the 8th International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production*.

Gürleyük, H. and Wallschläger, D. 2001 "Determination of Chromium(III) and Chromium(VI) in Waters Using Suppressed Ion Chromatography Coupled to Inductively Coupled Plasma Mass Spectrometry" *J. Anal. Atom. Spectrom.* **16**: 926-930.

Yehl, P.M., Gürleyük, H., Tyson, J.F., Uden, P.C. 2001 "Microwave-Assisted Extraction of Monomethyl Arsonic Acid from Soil and Sediment Standard Reference Materials" *Analyst* **126**: 1511-1518.

Gürleyük, H., Tyson, J.F., and Uden, P.C. 2000 "Determination of Extractable Arsenic in Soils Using Slurry Sampling - On-Line Microwave - Assisted Extraction - Hydride Generation - Atomic Absorption Spectrometry" *Spectrochim. Acta Part B* **55**: 935-942.

Gürleyük, H., Van Fleet-Stalder, V. and Chasteen, T.G. 1997 "Confirmation of the Biomethylation of Antimony Compounds" *App. Organometal. Chem.* **11**: 471-483.

Van Fleet-Stalder, V.H., Gürleyük, H., Bachofen, R., and Chasteen, T.G. 1997 "Effects of Growth Conditions on Production of Methyl Selenides in Cultures of *Rhodobacter sphaeroides*" *Indust. Microbiol. Biotechnol.* **19**: 98-103.

Presentations

- Gürleyük, H. 2015 "Analysis for Arsenic and Hexavalent Chromium: How to avoid false positives and increase data quality" DoD EMDQ Workshop, Portland, OR
- Gürleyük, H. 2014 "ICP-MS Issues and Solutions for Power Industry Wastewaters" Webcast to EPRI
- Gürleyük, H. 2011 "Critical Considerations for Data Quality in Elemental Speciation Analysis" NEMC 2011, Seattle, WA
- Gürleyük, H. 2011 "Trace Analysis of Hexavalent Chromium using IC-ICP-DRC-MS" NEMC 2011, Seattle, WA
- Gürleyük, H. 2011 "Challenges in environmental and industrial applications of speciation analysis" Invited Lecture, TraceSpec 2011, Pau, France
- Gürleyük, H. 2011 "Data Quality Challenges in Trace Metals and Speciation Analyses" EPA-LTIG 13th Annual Meeting, Ft. Meade, MD
- Gürleyük, H. 2011 "State-of-the-art in Trace Metals and Speciation Analysis" EPA-LTIG 13th Annual Meeting, Ft. Meade, MD
- Gürleyük, H. 2009 "Arsenic Speciation Analysis in Tissues" NEMC 2009
- Gürleyük, H. 2008 "Increasing the Capabilities of your ICP-MS" Perkin Elmer ICP-MS User Meeting, Seattle, WA 2008
- Gürleyük, H. 2007 "Trace Arsenic and Selenium Analysis by ICP-DRC-MS" NEMC 2007, Washinton DC
- Gürleyük, H. 2006 "Routine Arsenic Speciation Analysis by IC-ICP-MS? Are We There Yet?" NEMC 2006
- Gürleyük, H. 2006 "Analytical and Preparatory Issues Associated with Total Selenium and Selenium Speciation Analysis" NEMC 2006
- Gürleyük, H. 2006 "Determination of inorganic arsenic, selenium and chromium species in environmental and industrial samples" Perkin Elmer ICP-MS User Meeting, Portland, OR 2006
- Gürleyük, H. 2004 "Speciation Analysis and its Role in Waste Treatment & Remediation Technology" 8th International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production, Antalya, Turkey.
- Gürleyük, H. 2004 "Are chicken farms the newest source of arsenic contamination?" Winter Conference on Plasma Spectrochemistry, Fort Lauderdale, FL
- Gürleyük, H. 2003 "Chicken feed additives: Another source of arsenic contamination?" 5th Int. Symp. on Speciation of Elements in Biol., Environ. Toxicol. Sci., Almuñecar, Spain
- Wallschläger, D. & Gürleyük, H. 2003 "Arsenic speciation and cycling in a meromictic soda lake – a model system for arsenic-contaminated ground waters" 5th Int. Symp. on Speciation of Elements in Biol., Environ. Toxicol. Sci., Almuñecar, Spain
- Wallschläger, D., Gürleyük, H. & Hollibaugh, J.T. 2003 "Arsenic speciation and cycling in a permanently-stratified soda lake" invited oral presentation at the 39th IUPAC Congress, Ottawa, Canada
- Gürleyük, H. 2003 "Understanding the Behaviour of Metals by Speciation Analysis" Mining and the Environment, Sudbury, Canada
- Gürleyük, H. 2003 "Determination of Trace Elements in Difficult Matrices by Inductively Coupled Plasma – Dynamic Reaction Cell – Mass Spectrometry" Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany.

Gürleyük, H. 2003 "Extraction and Determination of Hexavalent Chromium in Fish Tissue" Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany (poster).

Gürleyük, H. 2003 "Low-Level Cyanide Speciation Analysis by IC-ICP-DRC-MS" Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany (poster).

Gürleyük, H. 2003 "Speciation Analysis of Arsenic by IC-ICP-DRC-MS" Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany (poster).

Gürleyük, H. 2002 "Interfacing Analytical Chemistry with Environmental Sciences" Invited Talk at Koc University, Istanbul, Turkey.

Gürleyük, H. 2002 "Determination of Trace Elements in Seawaters by Inductively Coupled Plasma - Dynamic Reaction Cell - Mass Spectrometry." 29th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies.

Gürleyük, H. 2002 "Determination of Hexavalent Chromium in Drinking Waters by Ion Chromatography – Inductively Coupled Plasma Mass Spectrometry (IC-ICP-MS)." American Water Works Association Inorganic Contaminants Workshop, San Diego, CA.

Gürleyük, H. 2002 "Determination of Various Trace Elements in Seawater by Inductively Coupled Plasma - Dynamic Reaction Cell - Mass Spectrometry." Winter Conference on Plasma Spectrochemistry, Scottsdale AZ (poster).

Gürleyük, H. 2002 "Evaluation of the Dynamic Reaction Cell Technology for the Speciation Analysis of Chromium Using IC-ICP-MS." Winter Conference on Plasma Spectrochemistry, Scottsdale AZ (poster).

Gürleyük, H. 2001 "Determination of Chromium(III) and Chromium(VI) in Waters by Ion Chromatography - Inductively Coupled Plasma - Dynamic Reaction Cell - Mass Spectrometry." 28th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies.

Gürleyük, H. 2001 "Determination of Hexavalent Chromium in Waters by Ion Chromatography – Inductively Coupled Plasma Mass Spectrometry." Winter Conference on Plasma Spectrochemistry, Norway (poster).

Gürleyük, H. 2001 "Determination of Trace Elements in Seawater by Inductively Coupled Plasma – Dynamic Reaction Cell - Mass Spectrometry." 28th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies.

Gürleyük, H. 2001 "Slurry Sampling – On-Line Microwave Extraction Coupled with ICP-MS Detection as an Alternative to TCLP." Winter Conference on Plasma Spectrochemistry, Norway (poster).

Gürleyük, H. 2001 "Speciation of Chromium in Waters Using Ion Chromatography Coupled to Inductively Coupled Plasma Mass Spectrometry." Winter Conference on Plasma Spectrochemistry, Norway.

Gürleyük, H. 2000 "Determination of Extractable Trace Elements in Soils by Slurry Sampling-Flow Injection-Microwave Assisted Extraction Followed by On-line Filtering and ICP-MS Detection." Pittcon 2000.

Gürleyük, H. 2000 "Double Capillary Nebulizer for Sample Introduction in Plasma Spectrometry." Pittcon 2000.

Gürleyük, H. 2000 "Speciation of Arsenic in Soils Using Various Combinations of Slurry Sampling, Flow Injection, Microwave Assisted Chemistry, Hydride Generation, and ICP-MS." 2000 Winter Conference on Plasma Spectrochemistry (poster).

Gürleyük, H. 1999 "Determination of Arsenic in Soils Using Slurry Sampling - On-Line Microwave-Assisted Extraction – Hydride Generation - Atomic Absorption Spectrometry." 31st Colloquium Spectroscopicum International.

Gürleyük, H. 1998 "Speciation of Arsenic Compounds in Soils by Liquid Chromatography with Element-Specific Detection." 25th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies.

Gürleyük, H. 1996 "Calculating the Total Biological Production of Volatile Sulfur and Selenium Compounds by Determining their Henry's Law Constants." 211th National American Chemical Society Meeting (poster).

Gürleyük, H. 1996 "Determination of Organic Compounds of the Green Alga *Halimeda* Using Supercritical Fluid Extraction (SFE) and Gas Chromatography - Mass Spectrometry (GC/MS)." Annual Texas Academy of Science Meeting.

Gürleyük, H. 1996 "Investigation of the Biologically Reduced and Methylated Compounds of Antimony." 211th National American Chemical Society Meeting (poster).

Gürleyük, H. 1996 "Physiological Aspects of Selenium Oxyanion Reduction and Methylation by *Rhodobacter sphaeroides*." 211th National American Chemical Society Meeting (poster).