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# HP Atomic Emission Detector

## Listing of AED Publications

March 1998

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### How to Use This Listing of AED Publications

This partial listing of AED articles and application notes is arranged by the following subject areas:

#### Petroleum

- General Articles
- Elements: Sulfur, Nitrogen, Oxygen, Lead, Nickel, Vanadium, Iron, Mercury, Palladium and Boron

#### Petrochemical/Chemicals

#### Chemical Warfare Agents

#### Pesticides

#### Environmental (Air, Water, Soil)

#### Environmental (Metals)

- General Articles
- Metals: Tin, Mercury, Lead, and Selenium

#### GC-AED as a Complementary Technique for GC-MS

#### Food/Flavors/Fragrances

#### Stable Isotopes

#### Pharmaceutical

#### Product Manufacturing (Impurities, etc)

#### Quantitation/Compound-Independent Response

#### General Articles on AED

#### AED Product Publications

In each subject area, the primary publications for understanding how the AED can be used are listed first. Quite often, these publications are available from Hewlett-Packard and are denoted by a publication number. Publications listed secondarily are also important, but reprints are typically not available. However, complete literature references are cited.

Last, tertiary articles are also included at the end of each subject area.

Note: Articles with an "\*" are new since the last update of this AED publications listing.

## Petroleum—General

Fast Analysis of Oxygen and Sulfur Compounds in Gasoline by GC-AED, *J High Resolution Chromatography* (1992), Article Reprint, Publication No. (43) 5091-6673.

Estimate Feedstock Processability—Characterize Sulfur Compounds in Middle Distillates and Deeply Hydrotreated Products [by AED/Simdis], *Hydrocarbon Processing* (1992), Article Reprint, Publication No. (43) 5091-6923E.

AED Simulated Distillation Software Provides Information for Improving Petroleum Process Control Decisions, Product Brief, Publication No. (43) 5091-4714E, July 1992.

Multielement Simulated Distillation with the HP 5921A AED, Application Note 228-205, Publication No. (43) 5091-5303, August 1992.

Selective Detection of Volatile Nickel, Vanadium, and Iron Porphyrins in Crude Oils by Gas Chromatography-Atomic Emission Spectroscopy, *J High Resolution Chromatography* (1991), Article Reprint, Publication No. (43) 5091-9597E.

Simultaneous Determination of Hydrogen Sulfide Sulfur, Mercaptan Sulfur, and Total Sulfur in Hydrotreated Naptha by GC with Atomic Emission Detection, by A. J. McCormack, C. Sudhaker, S. A. Levine, M. S. Patel, and J. M. McCann, *LC-GC*, Vol 12, No. 1, January 1994, 30–35.

Characterization of a Synthetic Jet Engine Lubricating Oil by Combined GC/FTIR/MS and GC-AED, Application Note 92-1, Publication No. (23) 5091-3545E, January 1992.

Determination of Ethers and Alcohols in Reformulated Gasolines by GC-AED, by J. Diehl, J. Finkbeiner, and F. DiSanzo, *J High Resolution Chromatography*, Vol 18, February 1995, 108–110.

Quantitative Determination of Sulfur Compounds in FCC Gasolines by AED—A Study of the Effect of Catalyst Type and Catalytic Conditions on Sulfur Distribution, by T. G. Albro, P. A. Dreifuss, and R. F. Wormsbecher (W. R. Grace), *J High Resolution Chromatography*, Vol 16, January 1993, 13–17.

The Use of GC-AES Multielement Simulated Distillation for Petroleum Product Fingerprinting, by J. J. Kosman (W. L. Gore & Assoc) and R. G. Lukco (BP Research), *J Chromatographic Science*, Vol 31, March 1993, 88–94.

Rapid Determination of Impurities in Petrochemicals Using GC-MS and GC-AED, by B. D. Quimby, V. Giarrocco, and J. Thorp, Hewlett-Packard Company, Gulf Coast Conference, September 1994.

Selective Determination of Gasoline Olefins by GC-AED, by P. Uden, N. Hardas, and R. Adam, University of Massachusetts, Pittsburgh Conference Session No. 595, March 1996.

Analysis of Fractionated Refinery Effluents by GC-AED and GC-MS, by B. Scott, J. Parrott, M. Comba, and J. Sherry, National Water Research Institute, Pittsburgh Conference Session No. 604, March 1996.

Pyrolysis-Gas Chromatographic Atomic Emission Detection for Sediments, Coals, and Other Petrochemical Precursors, by J. J. Seeley, Y. Zeng, and P. C. Uden, et al, *J Analytical Atomic Spectrometry*, Vol 7, September 1992, 979–985.

The Application of GC-AED for Elucidating Heteroatomic Functionality in Fuel Liquids, by K. Bartle, K. Holden, and S. Mitchell, University of Leeds, Sixteenth International Symposium on Capillary Chromatography No. 1397, September 1994.

Reformulated Gasolines: An Automated System for the Analysis of Oxygen, Sulfur, and Aromatic Compounds by GC-AED, by B. Quimby and D. Missud, Hewlett-Packard Company, Pittsburgh Conference Session No. 246, March 1993.

Fingerprinting Sulfur Compounds in Crude Oil Using GC-AED, by R. Snelling and W. Wade, Louisiana State University, Pittsburgh Conference Session No. 250, March 1993.

Unraveling the Uncertainties of GC-ECD Analyses—Resolving Lubricant PCB Contamination Issues with the GC-AED, by G. Reiner and F. Girshick, Exxon Research & Engineering, Pittsburgh Conference AED User's Meeting, March 1993.

Application of GC-AED in the Analysis of Coal Liquids, by K. Bartle and M. Holden, Leeds University, Sixteenth International Symposium on Capillary Chromatography AED User's Meeting, September 1994.

- \* Polycyclic Aromatic Sulfur Heterocycles. IV. Determination of Polycyclic Aromatic Compounds in a Shale Oil with the Atomic Emission Detector, by J. T. Andersson and B. Schmid, *J Chromatography-A*, 24 February 1995, 693 (2), 325–338.
- \* Improved Analysis of Sulfur, Nitrogen, and Other Heteroatomic Compounds in Gasoline and Diesel-Range Materials Using GC/Atomic Emission Detection, Application Note 228-394, Publication No. (23) 5966-3089E, December 1997.

## Petroleum—Sulfur

Simultaneous Determination of Hydrogen Sulfide Sulfur, Mercaptan Sulfur, and Total Sulfur in Hydrotreated Naptha by GC with Atomic Emission Detection, by A. J. McCormack, C. Sudhaker, S. A. Levine, M. S. Patel, and J. M. McCann, *LC-GC*, Vol 12, No. 1, January 1994, 30–35.

Quantitative Determination of Sulfur Compounds in FCC Gasolines by AED—A Study of the Effect of Catalyst Type and Catalytic Conditions on Sulfur Distribution, by T. G. Albro, P. A. Dreifuss, and R. F. Wormsbecher (W. R. Grace), *J High Resolution Chromatography*, Vol 16, January 1993, 13–17.

Fast Analysis of Oxygen and Sulfur Compounds in Gasoline by GC-AED, *J High Resolution Chromatography*, (1992), Article Reprint, Publication No. (43) 5091-6673.

Estimate Feedstock Processability—Characterize Sulfur Compounds in Middle Distillates and Deeply Hydrotreated Products [by AED/Simdis], *Hydrocarbon Processing* (1992), Article Reprint, Publication No. (43) 5091-6923E.

Comparison of Commercially Available Atomic Emission and Chemiluminescence Detectors for Sulfur-Selective Gas Chromatographic Detection, *J Chromatography*, 591 (1992) 313–323.

Comparison of the Sensitivity of the Flame Photometric Detector and the Atomic Emission Detector for the Analysis of Thiazole, Application Note 228-136, Publication No. (43) 5091-1933E, August 1991.

Analysis of Sulfur in Gasoline by Gas Chromatography Using the HP 5921A Atomic Emission Detector, Application Note 228-68, Publication No. (43) 5959-8707, February 1989.

Determination of Thiophene in Benzene at PPB Levels Using Gas Chromatography and Atomic Emission Detection, Application Note 228-158, Publication No. (43) 5091-3672E.

Analysis of Sulfur, Nitrogen, and Oxygen Compounds in Naptha by Gas Chromatography-Atomic Emission Detector, Application Note 228-76, Publication No. (43) 5959-8718, February 1989.

Analysis of Fuels for Organosulphur and Phosphorous Compounds Using an Atomic Emission Detector, *NWRI Contribution* 90–106, Canada Centre for Inland Waters, 867 Lakeshore Road, P. O. Box 5050, Burlington, Ontario L7R 4A6, Canada.

- \* Determination of Elementary Sulfur in Coal by Supercritical-Fluid Extraction and Gas Chromatography with Atomic-Emission Detection, by P. K. K. Louie, R. C. Timpe, S. B. Hawthorne, and D. J. Miller, *Fuel*, February 1993, 72 (2), 225–231.
- \* Separation and Analysis of Sulfur-Containing Polyaromatic Hydrocarbons in Light Oil, by H. Tajima, T. Kabe, and A. Ishihara, *Bunseki-Kagaku*, February 1993, 42 (2), 67–75 (Japanese).

### **Petroleum—Nitrogen**

Improved Detection of Nitrogen Compounds in Motor Fuels by GC-AED, by B. Quimby, P. Dryden, V. Giarrocco, Hewlett-Packard Company, and D. Grudoski, Chevron Company USA, Pittsburgh Conference Session No. 714, March 1996.

### **Petroleum—Oxygen**

A Quantitative Comparison Between ASTM D 4815 GC-AED and GC-FTIR for the Analysis of Oxygenates in Gasoline, by V. Giarrocco, B. D. Quimby, and J. Jegla, Hewlett-Packard Company, Pittsburgh Conference Session No. 218, March 1994.

Fast Analysis of Oxygen and Sulfur Compounds in Gasoline by GC-AED, *J High Resolution Chromatography* (1992), Article Reprint, Publication No. (43) 5091-6673.

### **Petroleum—Lead**

Specific Detection of Lead in Gasoline by Gas Chromatography Using the HP 5921A Atomic Emission Detector, Application Note 228-67, Publication No. (43) 5959-8706, February 1989.

### **Petroleum—Nickel, Vanadium, and Iron**

Selective Detection of Volatile Nickel, Vanadium, and Iron Porphyrins in Crude Oils by Gas Chromatography-Atomic Emission Spectroscopy, *J High Resolution Chromatography* 14:110–116; 1991, Article Reprint, Publication No. (43) 5091-9597E.

A Study of Diastereoisomerism of Oxovanadium Schiff Base Chelates by Gas Chromatography-Atomic Emission Spectroscopy, and High Performance Liquid Chromatography, by P. C. Uden and Y. Zeng, *Chromatographia*, Vol 34, No. 5-8, October 1992, 269–275.

Size Exclusion Chromatography Sample Pretreatment for GC-AED Analysis of Metalloporphyrins in Crude Oils, Y. Zeng, and P.C. Uden, *J High Resolution Chromatography*, Vol. 17, April 1994, 217–222.

High Temperature Gas Chromatography-Atomic Emission Detection of Metalloporphyrins in Crude Oils, Y. Zeng and P. Uden, *J High Resolution Chromatography*, Vol. 17, April 1994, 223–229.

- \* High-Temperature Gas Chromatography of Crudes and Residues Using Atomic-Emission Detection, by D. W. Hausler and D. H. Renfro, *Prepr-Am-Chem Soc,-Div-Pet-Chem*, July 1991, 36 (2), 225–232.

### **Petroleum—Mercury**

- \* Performance Improvements in the Determination of Mercury Species in Natural Gas Condensate Using Online Amalgamation Trap or Solid Phase Microextraction with Capillary Gas Chromatography-Microwave-Induced Plasma Atomic-Emission Spectrometry, by J. P. Snell and W. Frech, Y. Thomassen, *Analyst* (Cambridge, U. K.), August 1996, 121 (8), 1055–1060.

### **Petroleum—Palladium**

- \* Capillary Gas-Chromatographic Determination of Palladium Chelates Using Microwave Induced Plasma Atomic-Emission Detection, by M. Y. Khuhawar, A. Sarafraz-Yazdi, Y. Zeng, and P. C. Uden, *Analytical Chemistry* (Warsaw), 1995, 40 (3), 271–279.

## Petroleum—Boron

Element-Selective Gas Chromatographic Detection and Determination of Organoboron Compounds, *Analyst* 16 (December 1991), 1321–1326.

## Chemicals (Polymers, Other)

Gas Chromatography with Atomic Emission Spectrometric Detection for the Determination of Fluoroethers, by J. J. Slowick and P. C. Uden, *J Analytical Atomic Spectrometry*, Vol 9, September 1994, 951–956.

Hyphenation of Curie-Point-Pyrolysis High-Resolution Gas Chromatography with Several Spectroscopic Methods for the Analysis of Cured Epoxy Resins, by U. Fuchslueger, H.-J. Grether, and M. Grasserbauer, *J Analytical Chemistry*, Vol 349, 1994, 283–288.

Characterization of Polymer Additives Using High-Temperature Capillary Gas Chromatography: Possibilities of Atomic Emission Detection, by F. David and P. Sandra, *LC-GC*, Vol 11, No. 4, April 1993, 282–287, Article Reprint, Publication No. (43) 5091-9900E.

Determination of Halocarbons in Landfill Gas by GC-AED, by G. J. Koncar and S. S. Chao, Institute of Gas Technology, Pittsburgh Conference Session No. 1242, March 1995.

The Study of Organoarsine in Natural Gas with GC-AED, by L. Zhang, G. Koncar, and S. Chao, Institute of Gas Technology, Pittsburgh Conference Session No. 662, March 1994.

Analysis of Propylene Impurities by GC-AED, by J. Berry, Himont USA, Pittsburgh Conference Session No. 528, March 1994.

Determination of Lewisite and Its Breakdown Products in Soil and Water by GC-AED, by T. G. Albro, EAI Corporation, Pittsburgh Conference Session No. 524, March 1994.

Rapid Determination of Impurities in Petrochemicals Using GC-MS and GC-AED, by B. D. Quimby, V. Giarrocco, and J. Thorp, Hewlett-Packard Company, Gulf Coast Conference, September 1994.

Analysis of Trace Impurities in Ethylene, Propylene, and Light Hydrocarbon Streams Using GC-AED, by B. D. Quimby, N. Zhou, and V. Giarrocco, Hewlett-Packard Company, Gulf Coast Conference, September 1994.

HRGC-AED Characterization of Mixtures of Organic Products Coming from the Pyrolysis of Plastics, by R. Borrelli, C. Santini, E. Antonelli, P. Golfetto, and L. Zaninetta, Enichem, Sixteenth International Symposium on Capillary Chromatography No. 1002, September 1994.

Polymer Analysis Using Pyrolysis-GC-FTIR-MS and GC-AED, *J High Resolution Chromatography*, 14 (June 1991) 412–416.

Analysis of Sulfur and Fluorine-Containing Polymer Additive, Application Note 228-102, Publication No. (43) 5952-7235, August 1989.

- \* Analysis of Volatiles Associated with Industrial-Scale Processing of Expanded Polystyrene. II. Identification and Quantitation, by S. L. Hathcock and W. Bertsch, *J High Resolution Chromatography*, November 1993, 16 (11), 651–659.
- \* Determination of Congener Composition of Halowax Using an Atomic-Emission Detector, by T. Imagawa and Y. Yamamoto, *Bunseki-Kagaku*, August 1994, 43 (8), 629–633.
- \* Identification of Chlorinated Sulfur Compounds in Pulp Mill Effluents by GC-MS and GC-AED, by S. Pedersen-Bjergaard, T. N. Asp, J. Vedde, G. E. Carlberg, and T. Greibrokk, *Chromatographia*, February 1993, 35 (3-4), 193–198.

- \* Gas Chromatography of Chloride and Bromide as Phenylboronic Acid-Mercuric Nitrate Derivatives with Microwave-Induced Plasma Atomic-Emission Detection, by A. Sarafray-Yazdi, M. Y. Khuhawar, and P. C. Uden, *J Chromatography*, 6 March 1992, 594 (1-2), 395–399.
- \* Use of Supercritical-Fluid Extraction and Gas Chromatography with Atomic Emission Detection for Substituted Phenolic Compounds, by H. Casabianca, I. Seiller, and M. Bigois, *Spectra-2000-[Deux-Mille]*, 1993 (173), 31–35.
- \* Characterization of Polymer Additives Using High Temperature Capillary Gas Chromatography, Possibilities of Atomic-Emission Detection, by F. David and P. Sandra, *LC-GC-Int.*, December 1992, 5 (12), 22–26.
- \* Polycyclic Aromatic Sulfur Heterocycles, I, Use of Hydrogen Peroxide Oxidation for the Group Separation of Polycyclic Aromatic Hydrocarbons and Their Sulfur Analogues, by J. T. Andersson, *International J Environmental Analytical Chemistry*, 1992, 48 (1), 1–15.
- \* Two Stage Derivatization with N-(t-Butyldimethylsilyl)-N-Methyl-Trifluoroacetamide (MTBSTFA) and N-Methyl-bis-(Trifluoroacetamide) (MBTFA) for the Gas-Chromatographic Analysis of OH-, SH- and NH-Compounds, by K. Schoene, H. J. Bruckert, J. Steinhanses, and A. Koenig, *Fresenius J Analytical Chemistry*, February 1994, 348 (5-6), 364–370
- \* Determination of Polyacrylamide in Polyvinylalcohol by Gas Chromatography with Atomic Emission Detection, by F. C. Wang, *J Chromatography*, A, 1996, 753 (1), 101–108.

## Chemical Warfare Agents

- \* Speciation of Arsenic-Containing Chemical Warfare Agents by Gas Chromatographic Analysis after Derivatization with Thioglycolic Acid Methyl Ester, by K. Schoene, J. Steinhanses, H. J. Bruckert, and A. Koenig, *J Chromatography*, 17 July 1992, 605 (2), 257–262.  
The Use of GC-AED, GC-IRD, and GC-MS for the Characterization of Trace Level Chemical Weapon Convention (CWC)—Related Compounds in Paints, Rubber, and Soil, by M. Brickhouse, A. Rodriguez, E. Gonzales, B. Williams, and L. Hoffland, EAI Corporation, Pittsburgh Conference Session No. 596, March 1996.  
Use of the AED for Screening and Detection of Chemical Warfare Agents and Their Breakdown Products, by T. Albro, EAI Corporation, Pittsburgh Session No. 1243, March 1995.  
Determination of Lewisite and its Breakdown Products in Soil and Water by GC-AED, by T. G. Albro, EAI Corporation, Pittsburgh Conference Session 524, March 1994.
- \* Determination of Micro-Amounts of Hydrolysate of Lewisite in Polluted Water by Gas Chromatography-Atomic-Emission Spectrometry, by L. M. Zhou, G. L. Qu, and H. F. Gu, *Fenxi-Huaxue*, February 1996, 24 (2), 125–129 (Chinese).
- \* Gas-Chromatographic Separation of the Stereoisomers of Organophosphorus Chemical Warfare Agents Using Cyclodextrin Capillary Columns, by J. R. Smith and J. J. Schlager, *J High Resolution Chromatography*, March 1996, 19 (3), 151–154.
- \* Atomic-Emission Detection for the Quantitation of Trimethylsilyl Derivatives of Chemical-Warfare Agent Related Compounds in Environmental Samples, by W. R. Creasy, A. A. Rodriguez, J. R. Stuff, and R. W. Warren, *J Chromatography*, A, 18 August 1995, 709 (2), 333–344.

## Pesticides

Atomic Emission Detection for GC Analysis of Nitrogen-Containing Herbicides in Water, by N. Olsen, R. Carrell, R. Cummings, R. Rieck, and S. Reimer, *J AOAC International*, Vol 78, No. 6, 1995, 1464–1473.

Gas Chromatography with AED for Pesticide Screening and Confirmation, by N. L. Olson, R. Carrell, R. K. Cummings, and R. Rieck, *LC-GC*, Vol 12, No. 2, February 1994, 142–154.

Comparison of the Atomic Emission Detector to Other Element-Selective Detectors for the Gas Chromatographic Analysis of Pesticide Residues, *J Agricultural and Food Chemistry* 39 (1991) 2192–2199, Article Reprint, Publication No. (43) 5091-3919E.

Evaluation of an Atomic Emission Detector Using FDA Pesticide Extracts, Application Note 228-153, Publication No. (43) 5091-3137E, January 1992.

GC/MS Analysis of Unknowns Made Faster by Prescreening for Elements with the HP 5921A AED, Product Brief, Publication No. (43) 5091-6482E, January 1993.

Proposed EPA Method 8085 Utilizing GC-AED, by N. Olson, B. Carrell, R. Cummings, and R. Rieck, Washington State Department of Ecology, Pittsburgh Conference Session No. 603, March 1996.

Improved Screening for Pesticides in Foods Using GC-AED with GC-MS, by P. Wylie and B. Quimby, Hewlett-Packard Company, Pittsburgh Conference Session No. 253, March 1996.

Detection of Nitro Musks in Human Fat by Capillary Gas Chromatography with AED Using Programmed Temperature Vaporization (PTV), by M. Linkerhaegner, H.-J. Stan, and G. Rimkus, *J High Resolution Chromatography*, Vol 17, December 1994, 821–826.

Pesticide Testing: An Evolving Science, by R. Marsili, *Food Product Design*, February 1995, 66–80.

Capillary GC-AED: A Useful Instrumental Method in Pesticide Residue Analysis of Plant Foodstuffs, by H.-J. Stan and M. Linkerhaegner, Technical University of Berlin, Fifteenth International Symposium on Capillary Chromatography No. 1257, May 1993.

Capillary Gas Chromatography-Atomic Emission Detection: A Useful Instrumental Method in Pesticide Residue Analysis of Plant Foodstuffs, by H.-J. Stan and M. Linkerhaegner, *J High Resolution Chromatography*, Vol 26, September 1993, 539–548.

Screening Analysis of Pesticide Residues in Plant Foodstuffs by Capillary GC Using the DFG Multiresidue Method S19, a Comparison of Customary Detection by ECD/NPD with the Novel AED, by M. Linkerhaegner and H.-J. Stan, *Zeitschrift fuer Lebensmittel-Untersuchung und Forschung*, Vol 198, 1994, 473–479.

Element-Selective Detection of Pesticides by Gas Chromatography-Atomic Emission Detection and Solid-Phase Microextraction, by R. Eisert, K. Levsen, and G. Wuensch, *J Chromatography A*, Vol 683, 1994, 175–183.

Analysis of Organophosphorous Pesticides in Rice by Supercritical Fluid Extraction and Quantitation Using an Atomic Emission Detector, by Z. V. Skopec, R. Clark, P. M. A. Harvey, and R. J. Wells, *J Chromatographic Science*, Vol 31, November 1993, 445–449.

GC/MIP/AED Method for Pesticide Residue Determination in Fruits and Vegetables, by K. C. Ting and P. Dho, *J Association of Official Analytical Chemists*, Vol 74, No. 6, 1991, 991–998.

Pesticide Analysis by Gas Chromatography with a Novel Atomic Emission Detector, *J Chromatography* Vol 517, 1990, 131–142.

Determination of Pesticides in Aqueous Sample via Solid-Phase Microextraction (SPME) and GC-AED Coupling, by R. Eisert and K. Levsen, Fraunhofer Institute of Toxicology and Aerosol Research, Sixteenth International Symposium on Capillary Chromatography No. 1387, September 1994.

- Analysis of Pesticides at the Parts-per-Billion Level in Surface Water Using Gas Chromatography with Atomic Emission Detection, Application Note 228-127, Publication No. (43) 5091-0809E, February 1991.
- \* Use of Supercritical-Fluid Extraction-GC-Atomic-Emission Detection for the Analysis of Halogen and Sulfur Pesticides, by H. Casabianca, *Analisis*, September 1992, 20 (Suppl. 7), S9–S11 (French).
  - \* Study of Pesticide 1605 by GC-Atomic-Emission Spectrometry Using Microwave Plasma, by B. L. Zuo, G. G. Qu, and Y. L. Ma, *Fenxi-Kexue-Xuebao*, 20 September 1995, 11 (3), 63–65 (Chinese).
  - \* Pesticide Residue Analysis in Foodstuffs Applying Capillary Gas Chromatography with Atomic Emission Detection, State-of-the-Art Use of Modified Multimethod S19 of the Deutsche Forschungsgemeinschaft and Automated Large-Volume Injection with Programmed-Temperature Vaporization and Solvent Venting, by H.-J. Stan and M. Linkerhaegner, *J Chromatography A*, Vol 750, 1996, 369–390.
  - \* Extraction of Triallate from Soil with Supercritical Carbon Dioxide and Determination by Gas Chromatography-Atomic Emission Detection, Comparison with a Solvent Extraction Procedure, by J. Bernal, J. Jimenez, J. Atienza, and A. Herguedas, *J Chromatography A*, Vol 754, 1996, 257–263.
  - \* Possibilities of Gas Chromatography-Atomic Emission Detection in Pesticide Multiresidue Analysis, Application to Herbicide Analysis in Soils, by J. Bernal, M. Nozal, M. Martin, and J. Jimenez, *J Chromatography A*, Vol 754, 1996, 245–256.

## Environmental (Air, Water, Soil)

- Analysis of Atmospheric Sulfur Gases by Capillary Gas Chromatography with AED, by H. B. Swan and J. P. Ivey, *J High Resolution Chromatography*, Vol 17, December 1994, 814–820.
- AED as a Diagnostic Tool for Characterization of Preconcentrates for Analysis of Volatile Organics in Air by GC, by E. H. Daughtrey and K. D. Oliver, ManTech Environmental Technology, and W. A. McKlenny, USEPA, Pittsburgh Conference Session No. 1241, March 1995.
- On the Complementary Nature of CGC-MS, CGC-FTIR, and CGC-AED for Water Pollution Control, *J High Resolution Chromatography* 14:554–557; 1991, Article Reprint, Publication No. (43) 5091-9591.
- Analysis of an Environmental Sediment Extract Using Gas Chromatography and the HP 5921A Atomic Emission Detector, Application Note 228-71, Publication No. (43) 5959-8709, February 1989.
- Using the HP 5921A Atomic Emission Detector to Complement GC/IRD/MSD Characterization of Environmental Samples, Application Note 228-73, Publication No. (43) 5959-8714, February 1989.
- GC/MS Analysis of Unknowns Made Faster by Prescreening for Elements with the HP 5921A AED, Product Brief, Publication No. (43) 5091-6482E, January 1993.
- Continuous Liquid-Liquid Extraction Combined On-Line with Capillary GC-AED for Environmental Analysis, by E. Goosens, D. de Jong, G. de Jong, F. Rinkema, and U. Brinkman, *J High Resolution Chromatography*, Vol 18, January 1995, 38–44.
- Capillary GC Combined with AED for the Analysis of Polychlorinated Biphenyls, by S. Pedersen-Bjergaard, S. Semb, E. Brevik, and T. Greibrokk, *J Chromatography A*, Vol 723, 1996, 337–347.
- Analysis of Fractionated Refinery Effluents by GC-AED and GC-MS, by B. Scott, J. Parrott, M. Comba, and J. Sherry, National Water Research Institute, Pittsburgh Conference Session No. 604, March 1996.
- Determination of Chlorophenols in Drinking Water Samples at the Subnanogram per Millilitre Level by Gas Chromatography with Atomic Emission Detection, by M. I. Turnes, I. Rodriguez, M. C. Mejuto, and R. Cela, *J Chromatography A*, Vol 683, 1994, 21–29.
- GC-AED Set-Up for Bio-Monitoring of PCBs and Methylsulfonyl-PCBs, by K. Janak, E. Grimvall, C. Oestman, and A. Colmsjoe, *J Microcolumn Separations*, Vol 6, No. 6, 1994, 605–616.

- Analysis of Heteroatom Compounds (S, P, N, and Cl) by GC-AED from Aqueous Extracts Collected from the Lower Great Lakes, by B. F. Scott and R. J. Maguire, Environment Canada, Pittsburgh Conference Session No. 1244, March 1995.
- \* Online Coupling of Solid-Phase Extraction and Gas Chromatography with Atomic-Emission Detection for Analysis of Trace Pollutants in Aqueous Samples, by T. Hankemeier, A. J. H. Louter, F.D. Rinkema, and U. A. T. Brinkman, *Chromatographia*, February 1995, 40 (3-4), 119–124.
  - \* Large-Volume Injections in Gas Chromatography-Atomic-Emission Detection: An Approach for Trace-Level Detection in Water Analysis, by F. D. Rinkema, A. J. H. Louter, and U. A. T. Brinkman, *J Chromatography A*, 2 September 1994, 678 (2), 289–297.
- Capillary GC-AES in Environmental Analysis, by M. Cooke, D. Leathard, C. Webster, and V. Rogerson, Sfeffield Hallam University, Fifteenth International Symposium on Capillary Chromatography No. 933, May 1993.
- Performance of GC-AED System in a Mobile Analytical Laboratory, by G. L. Hudak, P. S. Demond, and L. Russell, *American Environmental Laboratory*, October 1993, 29–32.
- Element-Selective Detection Using Capillary GC-AED, by M. Cooke, D. A. Leathard, C. Webster, and V. Rogerson, *J High Resolution Chromatography*, Vol. 16, November 1993, 660–662.
- Analysis of Volatile Organic Compounds by GC with Thermal Desorption Cold-Trap Injection and Atomic Emission and Mass Selective Detection, by Yamashita, Ozawa, Yamaguchi, Wylie, et al, *J High Resolution Chromatography*, Vol 15, August 1992, 549–551.
- Pyrolysis—Gas Chromatographic Atomic Emission Detection for Sediments, Coals and Other Petrochemical Precursors, by J. A. Seeley, Y. Zeng, P. C. Uden, et al, *J Analytical Atomic Spectrometry*, Vol 7, September 1992, 979–985.
- Analysis of Volatile Priority Pollutants Using Gas Chromatography with the HP 5921A Atomic Emission Detector, Application Note 228-69, Publication No. (43) 5959-8711, February 1989.
- Specific Detection of any Gas Chromatographable Element in Sediment Extracts, Reprint from Proceedings of the First International Symposium Field Screening Methods for Hazardous Waste Site Investigations, October 11–13, 1988 (Las Vegas).
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