

Peer Reviewed Publications

The following are peer reviewed publications authored by Dr. Matthew S. Klee. Reprints must be obtained directly from the respective publishers for most of these.

Peer Reviewed Publications

1. "Evaluation of conditions of comprehensive two dimensional gas chromatography that yield a near-theoretical maximum in peak capacity gain", Matthew S. Klee, Jack Cochran, Mark Merrick, Leonid M. Blumberg, J. Chrom. A, January 2015. [View article](#)
2. "Measurement of retention in comprehensive two-dimensional gas chromatography using flow modulation with methane dopant", Matthew S. Klee, Leonid M. Blumberg, J. Chrom. A, 1217 (2010) 1830–1837
3. "Analysis of Potential Genotoxic Impurities in Pharmaceuticals using Two-dimensional Gas Chromatography with Deans switching and Independent Column Temperature Control using a Low Thermal Mass Oven Module.", F. David, K. Jacq ,P. Sandra, A. Baker, M. S. Klee, Analytical and Bioanalytical Chemistry, DOI: 10.1007/s00216-009-3304-9
4. "A Critical Look at the Definition of Multidimensional Separations", Matthew S. Klee and Leonid M. Blumberg, J. Chrom. A, 1217 (2010) 99–103
5. "Gas chromatographic retention in uncoated fused silica capillaries," Matthew S. Klee, J. Sep. Sci., 2009, 32 (9) DOI: 10.1002/jssc.200900269
6. "Optimizing capillary column backflush to improve cycle time and reduce column contamination", Matthew S. Klee, J. Sep. Sci., 32 (1), 2009, 88-98 DOI: 10.1002/jssc.200800434
7. "Comparison of One-Dimensional and Comprehensive Two-Dimensional Separations by Gas Chromatography", LM Blumberg, M. S. Klee, F David, P Sandra, J. Chrom A ,1188(1), 2008, 2-16
8. "Forensic Applications of New Analytical Technologies", Fiona Couper, Tom Gluodenis, Mark Jensen, Matthew Klee, Lawrence Neufield, Bruce Quimby, Lucas Zarwell, Jerry Zweigenbaum, Forensic Magazine: April/May, 2005

9. "Theoretical and Practical Aspects of Fast Gas Chromatography and Method Translation", Matthew S. Klee and Leonid Blumberg, J. Chrom. Sci., (40) 2002, 234-247
10. "Quantitative Comparison of Performance of Isothermal and Temperature Programmed GC in a Constant Pressure Mode", Leonid M. Blumberg, and Matthew S. Klee, J. Chromatogr. A, 933/1-2 (2001) 13-26
11. "Metrics of Separation in Chromatography", Leonid M. Blumberg, Matthew S. Klee, J. Chromatogr. A, 933/1-2 (2001) pp 1-11
12. "Elution Parameters in Constant-Pressure, Single Ramp Temperature-Programmed gas Chromatography", Leonid M. Blumberg, Matthew S. Klee, J. Chromatogr. A, 918 (2001) 113-120
13. "Correlation of Characteristic Thermal Constant and Elution Temperature in GC", L. M. Blumberg, M. S. Klee, Anal. Chem., 73(3), 2001, 684-685
14. "Optimal Heating Rate in Gas Chromatography", L. M. Blumberg, M. S. Klee, J Micro Sep 12 (9): 508-14, 2000
15. "Characteristic Thermal Constant and Dimensionless Heating Rate. The Links to Optimum Heating Rate in GC", Leonid Blumberg & Matthew S. Klee, Anal. Chem., 72(17) , 2000, pp 4080-4089
16. "Superior ECD Performance through Design and Application", Matthew S. Klee, Matthew D. Williams, Imogene Chang, Joseph Murphy, J. HRC&CC, 22(1), 1999, pp. 24-28 DOI: 10.1002/(SICI)1521-4168(19990101)22:1<24::AID-JHRC24>3.0.CO;2-N
17. "Advances in GC Technology", Amer. Lab., October, 1998, pp 20C - 24C
18. "Method Translation and Retention Time Locking in Partition GC", Leonid M. Blumberg, Matthew S. Klee, Anal. Chem., 70(18), 1998, pp. 3828-3839
19. "Productivity Advances in GC Pesticide Methods", Matthew Klee & Tim Sullivan, Envir. Testing & Analysis, 7(2), 1998, pp 16
20. "Evaluation of Column Performance in Constant Pressure and Constant Flow Capillary Gas Chromatography", Leonid M. Blumberg, William H. Wilson, Matthew S. Klee, J. Chrom. A, 842 (1999) 15-28
21. "Improving gas chromatographic sensitivity with large-volume sample injection", M. S. Klee, D. D. Nixon, P. L. Wylie, Amer. Lab., February, 1998, pp 104H-I

22. "Supercritical Fluid Chromatography of Paclitaxel", N.K. Jagota, J. B. Nair, R. Frazer, M. Klee, M. Z. Wang, *J Chrom. A*, 721 (1996) 315-322
23. "Hydrocarbon class separation and quantitation by split column effluent analysis", Matthew S. Klee and Mu Z Wang, *Environment International*, Volume 21, Issue 3 (1995) Page XXIV
24. "Constant Flow versus Constant Pressure in a Temperature-Programmed Gas Chromatograph", Leonid Blumberg, Terry A. Berger, Matthew Klee, *J. HRC & CC*, 18 (1995) 378-380 DOI: 10.1002/jhrc.1240180611
25. "Achiral and Chiral Analysis of Camazepam and Metabolites by Packed-Column Supercritical Fluid Chromatography", M. Z. Wang, M. S. Klee, S. K Yang, *J. Chrom. B*, 665 (1995) 139-146
26. "Retention Prediction Cased on Molecular Interactions in Packed-Column Supercritical Fluid Chromatography", D. M. Heaton, K. D. Bartle, A. Clifford, M. S. Klee, T. A. Berger, *Anal. Chem.*, 66(23),1994
27. Klee, I. L. Chang, "Optimizing Temperature Program and Flow Rates for Capillary GC Analysis of EPA-608 Pesticides", *HRC & CC*, 14 (1991) 18-24 DOI: 10.1002/jhrc.1240140106
28. "Braces from a Player's Perspective", Matthew S. Klee, *The Instrumentalist*, June, 1988, pp. 57
29. Klee, "Column Selection in Gas-Liquid Chromatography", invited article for *LC/GC Magazine*, 5(9) (1987)774-782
30. Klee, M. A. Hepp, "Characterization of Porous Polymers by Strength and Selectivity", *J. Chromatogr.*, 404 (1987) 145-154
31. Klee, M. A. Kaiser, "Current Status of High Resolution Column Technology for Gas Chromatography", *J. Chrom. Sci.*, 24 (1986) 369-373
32. Klee, "Optimizing Separations in Gas Chromatography", in *Modern Practice of Gas Chromatography*, 2nd Edition, R. L. Grob, Ed., John Wiley and Sons, NY, 1984
33. Klee, M. A. Kaiser, K. A. Laughlin, "Systematic Approach to Stationary Phase Selection in Gas Chromatography", *J. Chromatogr.*, 279 (1983) 681-688
34. M. S. Klee, L. B. Rogers, L. A. Carreira, L. Azzaraga, "Evaluation of an Automated HPLC System having Multiple Detectors", *Pergamon Ser. Environ. Sci.*, Vol. 7, *Anal.*

Tech. Environ. Chem. 2, (1982) 177-192

35. Klee, M.S., A. M. Harper, L. B. Rogers, "Effect of Normalization on Feature Selection in Pyrolysis Gas Chromatography of Coal Tar Pitches", *Anal. Chem.*, 53 (1981) 801-805

36. Fetzer, J. A. Graham, R. F. Arrendale, M. S. Klee, L. B. Rogers, "Characterization of Carbonaceous Materials Using Extraction with Supercritical Pentane", *Sep. Sci. Technol.*, 16(1) (1981) 97-111

Industrial/Commercial Articles

MSK Details

Below is a list of non peer-reviewed (industrial/commercial) publications authored by Dr. Klee. I included links to copies when possible.

Dr. Klee is the premier author of monthly articles featured in *GC Solutions*, an online publication produced by Separation Science. The archive of articles (>35) can be accessed directly at the [Separation Science](#) website.

Industrial/Commercial Publications (partial list)

The following are primarily based on work done while at Agilent Technologies/Hewlett Packard.

1. "A Generic Method for the Analysis of Residual Solvents in Pharmaceuticals Using Static Headspace-GC-FID-MS", Frank David, Pat Sandra, Karine Jacq, Matthew S. Klee, [American Laboratory](#), February 01, 2011
2. "High Throughput Mineral Oil Analysis (Hydrocarbon Oil Index) by GC-FID Using the Agilent Low Thermal Mass (LTM) System", Frank David, Matthew Klee, Agilent publication [5990-4851EN](#), 2009
3. "Automated Sample Preparation for Profiling Fatty Acids in Blood and Plasma using the Agilent 7693 ALS", Frank David and Bart Tienpont, Matthew S. Klee and Paul Tripp, Agilent publication [5990-4822EN](#), 2009
4. "Going with the flow", *The Column*, Advanstar Publications, 5(7), 2009, 22-24
5. "Independent Column Temperature Control Using an LTM Oven Module for Improved Multidimensional Separation of Chiral Compounds", Frank David, Matthew S. Klee, Agilent publication [5990-3428EN](#)
6. "Analysis of Volatile Organic Compounds in Water Using Static Headspace-GC/MS", Frank David, Karine Jacq, Matthew S. Klee, Agilent publication [5990-3285EN](#)

7. "Analysis of Suspected Flavor and Fragrance Allergens in Cosmetics Using the 7890A GC and Capillary Column Backflush", Frank David, Matthew S. Klee, Agilent publication [5989-6460EN](#)
8. "Determination of Nitro-Polycyclic Aromatic Hydrocarbons in Air Particulates using GC/Triple Quadrupole/MS", Frank David, Matthew S. Klee, Agilent publication [5990-3366EN](#)
9. "A Generic Method for the Analysis of Residual Solvents in Pharmaceuticals Using Static Headspace-GC-FID/MS", Karine Jacq, Frank David, and Pat Sandra (R.I.C., Belgium), M. S. Klee, September 2008, Agilent Publication, [5989-9726EN](#)
10. "Low-Pressure Retention Time Locking with the 7890A GC", Courtney Milner & Russell Kinghorn (BST International), M. S. Klee, July 2008, Agilent Publication [5989-8366EN](#)
11. "The Use Of Automated Backflush on the 7890A/5975A GC-MS System", Courtney Milner & Russell Kinghorn (BST International), M. S. Klee, July 2008, Agilent Publication [5989-8588EN](#)
12. "GC/MS Analysis of PCBs in Waste Oil Using the Backflush Capability of the Agilent QuickSwap Accessory", Frank David (R.I.C., Belgium), M. S. Klee, December 2007, Agilent Publication [5989-7601EN](#)
13. "A Column-Flow Independent Configuration for QuickSwap", Matthew S. Klee, Bruce Quimby, May 2007, Agilent Publication [5989-6702EN](#)
14. "Reliable Transfer of Existing Agilent 6890/5973 GC/MSD Methods to the New 7890/5975 GC/MSD", Russell Kinghorn, Courtney Milner, Matthew Klee, April 2007, Agilent Publication [5989-6569EN](#)
15. "Analysis of Suspected Flavor and Fragrance Allergens in Cosmetics Using the 7890A GC and Capillary Column Backflush", March 2007, Agilent Publication [5989-6460EN](#)
16. "Simplified Backflush Using Agilent 6890 GC Post Run Command", Matthew Klee, June, 2006, Agilent Publication [5989-5111EN](#)
17. "Retention Time Locking Using USP 467 Standard Sample and Automated Headspace Sampling", C. Kai Meng & Matthew S. Klee, 1999, Agilent Publication [5968-3760E](#)
18. "Precise Time-Scaling of Gas Chromatographic Methods Using Method Translation

and Retention Time Locking", B. D. Quimby, L. M. Blumberg, M. S. Klee, P. L. Wylie, April 1998, Agilent Publication [5967-5820E](#)

19. Application Note 228-400, "Micro Liquid-Liquid Extraction with the HP 7683 Automatic Liquid Sampler", M S. Klee, C. K. Meng, Feb., 1998, (23) [5966-4225E](#)

20. "Retention Time Locking in GC Measurements", Matthew S. Klee & Bruce Quimby, Pittsburgh Conference TODAY, March 2, 1998, pp 53

21. Application Note 228-395 , "Ambient Headspace Analysis with the HP 7683 Automatic Liquid Sampler", M. S. Klee, 2/98, (23) [5966-1473E](#)

22. Application Note 228-396, "Validation Analysis of EPA CLP Target Organochlorine Pesticides with the HP 6890 Series GC and Micro-ECD", Joe Murphy, Imogene Chang, M. S. Klee, 1/98, (23) [5966-3742E](#)

23. Application Note 228-392, "Retention Time Locking: Concepts and Applications", Vince Giarrocco, Bruce Quimby, and Matthew Klee, 12/97, (23), [5966-2469E](#)

24. "Reproducibility Within Hundredths of a Minute", M. S. Klee, HP Peak Magazine, 3/97, 10-11, 5966-0883E

25. Applications Note 228-389, "Applications of Retention Time Locking in Simulated Distillation", Vince Giarrocco, Matthew S. Klee, Sept. 1997, (23) [5966-1461E](#)

26. Applications Note 228-383, "Advantages of the HP 6890 NPD Series over the HP 5890 Series NPD for the Analysis of Herbicides Using EPA Method 8141A", Paul Fjeldsted, Donald Nixon, Matthew S. Klee, Aug. 1997, (23) [5965-8418E](#)

27. Applications Note "Purge and Trap GC-MS Determination of Trace Volatile Compounds in Drinking Water Using the HP 5973 Series MSD and Volatiles Interface", Imogene Chang and Matthew Klee, 5/97, [5965-8105E](#)

28. Applications Note 228-371, "Analysis of Sulfur and Phosphorus Compounds with a Flame Photometric Detector on the HP 6890 Series Gas Chromatograph", Bill Wilson, Matthew S. Klee, Feb. 1997, (23) [5965-7442E](#)

29. "HP's Approach to Fast GC", Mike Wilson, Matthew S. Klee, Chemical Analysis News, Feb. 1997

30. Applications Note 228-377, "Large-Volume Injection for Gas Chromatography Using COC-SVE", Bill Wilson, Don Nixon, Matthew S. Klee, April 1997, (23) [5965-7923E](#)

31. Applications Note 228-378, "Large-Volume Cool On-Column Injection Using the HP

G2399A Solvent Vapor Exit Kit", F. David, P. Sandra, Matthew S. Klee, April 1997, (23) [5965-7925E](#)

32. Applications Note 228-379, "Analysis of Trihalomethanes by Micro Liquid-Liquid Extraction and Capillary Gas Chromatography with the HP 6890 Micro ECD", F. David, P. Sandra, Matthew S. Klee, April 1997, (23) [5965-8014E](#)

33. Applications Note 228-381, "Purge and Trap GC-MS Determination of Trace Volatile Compounds in Drinking Water Using the Drinking Water Using the HP 5973 MSD and Volatiles Interface", Imogene L. Chang, Matthew S. Klee, May 1997(23) [5965-8105E](#)

34. Applications Note 228-373, "Predictable Translation of Capillary Chromatography Methods for Fast GC", Matthew S. Klee, Vince Giarrocco, March 1997, (23) [5965-7673E](#)

35. Applications Note 228-374, "Large Volume Injection for Gas Chromatography Using a PTV Inlet", Bill Wilson, Philip L. Wylie, Matthew S. Klee, March 1997, (23) [5965-7770E](#)

36. Applications Note 228-380, "Analysis of Nitroaromatics and Nitro-Polycyclic Aromatic Hydrocarbons by Capillary Gas Chromatography with the HP 6890 Micro-ECD", F. David, P. Sandra, Matthew S. Klee, March 1997, (23) [5965-8015E](#)

37. Applications Note 228-327, "Analysis of Sulfur and Phosphorus Compounds with a Flame Photometric Detector on the HP 6890 Series Gas Chromatograph", Bill Wilson, Matthew S. Klee, Feb. 1997, (23) [5965-7442E](#)

38. "HP ChemStation for Gas Chromatography: Reporting Units, Significant Digits, and Threshold Values for HP 5890, HP 6890, and HP 35900 Data", Len Bilen, Matthew S. Klee, Thomas J. Stark, July, 1996, (23) [5965-1640E](#)

39. Applications Note 228-327, "Determining Aromatics in Finished Gasolines: ASTM Method D 5580", Janette Spaninks-Verdult, Matthew S. Klee, June, 1995, (23) [5964-0394E](#)

40. Applications Note, "Analysis of Sulfur Compounds in Commercial Beers", Jim Sullivan, Poori Hemmati, and Matthew S. Klee, 7/95, [5963-6636E](#)

41. Applications Note 228-329, "Determining Benzene in Finished Gasolines and Refinery Streams to Comply with CAA Requirements: ASTM Method D 3606", Janette Spaninks-Verdult, Matthew S. Klee, June, 1995, (23) [5964-1730E](#)

42. Applications Note 228-330, "Determining Oxygenates in Gasoline: ASTM Method D 4815", Janette Spaninks-Verdult, Matthew S. Klee, June, 1995, (23) [5964-1729E](#)

43. Applications Note 228-294, "Speed Improvements in Detailed Hydrocarbon Analysis

of Gasoline Using 100 μm Capillary Columns", Bruce Quimby, Vince Giarrocco, Matthew S. Klee, February, 1995, (23) 5963-5190E

44. Performance Brief, "Shifting Response Curves to Meet Linearity Requirements", Matthew S. Klee, (43) 5962-9571E, 1994

45. Application Note 228-256, "Determination of Organic Odor in a Polymeric Matrix Using the HP 7694 Headspace Sampler", Hafeez O. Fatunmbi, Matthew S. Klee, and Roger L. Firor (43) [5962-8636E](#), 1994

46. Application Note 228-252, "SFC Analysis of Caffeine and its Analogs in Aqueous Samples", Matthew S. Klee, (43) 5091-9575E, 1993

47. Application Note 228-226, "Determination of the Aromatic Content of Diesel Fuels by Supercritical Fluid Chromatography with Flame Ionization Detection (Downstream Mode)", (43) 5091-6697E, 1993

48. Application Note 228-231, "Rapid Determination of Aromatic Hydrocarbons in Gasoline, Jet, and Diesel Fuel by Supercritical Fluid Chromatography", 1993

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50. Application Note 228-210, "Analysis of Herbicides by Gas Chromatography Using Automated Cool On-Column Injection with 320 μm Columns", 1992

51. Application Note 228-167, "Optimization of Group Separations for Determination of the Aromatics Content of Diesel Fuels", 1992

52. Application Note 228-169, "Supercritical Fluid Chromatography of Polywaxes and Heavy Petroleum Fractions", 1992

53. Application Note 228-114, "Increasing Lab Throughput with Automated Compound Confirmation Reporting - The Organochlorine Pesticide Analysis System", May 1990

54. Application Note [228-106](#), "Pyrolysis-GC/MS/IR Analysis of Nylon 6/6", M. S. Klee, I. L. Chang, August 1989

55. Application Note 228-101, "Optimized Conditions for EPA-608 Analysis Using an HP-5 Series 530 μm Capillary Column", July 1989

56. Application Note [228-100](#), "Pyrolysis-GC/MS/IR Analysis of Kraton 1107", July 1989

57. Application Note 228-96, "Temperature and Flow Optimization Applied to EPA-608 Analysis", July 1989
58. Application Note 228-95, "Optimized EPA-608 Analysis Using an Ultra-2 High-Resolution Capillary Column", July 1989
59. Application Note [228-97](#), "Pyrolysis GC/MS/IR Analysis of Polyethylene", June 1989
60. "A Generic Method for the Analysis of Residual Solvents in Pharmaceuticals Using Static Headspace-GC-FID-MS", Frank David, Pat Sandra, Karine Jacq, Matthew S. Klee, American Laboratory, February 01, 2011
61. "Forensic Applications of New Analytical Technologies", Tom Gluodenis, Bruce Quimby, Fiona Couper, Jerry Zweigenbaum, Lawrence Neufeld, Lucas Zarwell, Mark Jensen, Matthew Klee, [Forensic Magazine](#), 04/01/2005
62. Improving gas chromatograph sensitivity with large-volume sample injection. [American Laboratory](#), 3(5) February 1998