KIM R. WILLIAMS

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EDUCATION

Ph.D., Chemistry	Michigan State University	1986
B.Sc., Chemistry	McGill University	1981

CURRENT POSITION

- **Associate Professor**, Colorado School of Mines, Chemistry and Geochemistry Department and Materials Science and Engineering Division
- **Director**, Laboratory for Advance Separations Technologies
  Research and technology development directed at analysis of complex systems of macromolecules, nanoparticles, and micron-size particles and correlating physicochemical properties with behavior. Techniques include field-flow fractionation, chromatography (SEC, HPLC), light scattering (multiangle, dynamic), mass spectroscopy (MALDI TOF MS), single particle counting, and microscopy (SEM, TEM, optical). Funding from NSF, national laboratories, and private corporations to support a multidisciplinary research group of postdoctorals and students.

PREVIOUS POSITIONS

- **Sabbatical faculty**, Sandia National Laboratories. Joint appointment with Biosystems Research and Microfluidics Departments, Livermore, California. Research on front end sample preparation device for pathogenic microorganisms and probing 3-D protein structure using crosslinkers and LC/MS. 2003 – 04
- **Assistant Professor**, Chemistry and Geochemistry Department and Materials Science and Engineering Division, Colorado School of Mines, 1997 - 2000
- **Visiting Scientist**, National Institute of Standards and Technology. Appointment with Building and Fire Research Laboratory, Maryland, 1998. Physicochemical analysis of particles used in coating materials.
- **Assistant Director**, Field-Flow Fractionation Research Center, University of Utah, 1994 – 1997
  Prepared grant proposals, conducted research, liaised with corporate sponsors, mentored students.
- **Adjunct Assistant Professor**, Department of Chemistry, University of Utah, 1992-1997
  Conducted research, mentored students, taught undergraduate analytical chemistry
- **Postdoctoral**, Professor J. Calvin Giddings, Department of Chemistry, University of Utah, 1987-92

AWARDS AND HONORS

- **2008 American Chemical Society Separation Science and Technology Award**, nominated

- **2007 Outstanding Graduate Professor Award**, Chemistry and Geochemistry Department
- Women in Engineering Leadership Institute Workshop, 2005 (40 selected nationwide)
- Keynote Lecture, ASMS Conference on Mass Spectrometry, 2005
- Member, International Field-Flow Fractionation Scientific Committee, 1999 – present
- **1999 Outstanding Graduate Professor Award**, Chemistry and Geochemistry Department
  "This award reflects classroom ability and preparation, professionalism, and interest in graduate students and their studies."
- Associated Western Universities Faculty Fellowship, 1999
- Merit Level for excellence in teaching, Michigan State University, 1985

RESEARCH SPONSORS

Federal Government

- Thermal field-flow fractionation for polymers of high molecular weight and complex architectures, NSF, (08/05 - 07/10)
- Renewable Energy Materials Research Science and Engineering Center, NSF, PI Craig Taylor (09/01/08 – 8/31/14)
- Probing protein and humics interactions with membrane surfaces, NSF IUCRC: Membrane Applied Science and Technology (1/00-12/03).
- An automated research microscope for visualization and analysis of environmental biological samples: Development of methods for rapid analysis of bacteria. NSF Biological Major Research Instrumentation, co-PI (2001).
- Acquisition of a MALDI/TOF mass spectrometer for coupling with field-flow fractionation: Analyses of bacteria and polymers, NSF CRIF, co-PI (2000).

National Laboratories

- Universal continuous-flow bioparticle processor (from low volume biological fluids to high volume water monitoring), Sandia National Laboratories, co-PI (04-06).
- Characterizing nanoparticles used in coatings. National Institute of Standards and Technology, Building and Fire Research Lab (5/99-10/99).
- Rapid separation and identification of whole cell microorganisms. FFF, MALDI-TOF mass spectrometry, and particle counting, Pacific Northwest National Laboratory (9/97-9/99).

Corporate Sponsors

- Identification and Characterization of Robust Strains of Phototrophic Algae for Biofuel Production", C2B2 Conoco Phillips (with M. Posewitz, K. Voorhees), 10/01/08 – 9/30/10
- Development of a new metrology for CMP slurries based on FFF separations and single particle counting", Intel, Cabot Microelectronics, Dupont Air Products Nanomaterials, Fujimi, Planar Solutions (09/06 - 08/08)
- Composition-based separations and microgel quantitation, Cytec Industries, $185,999. (1/07 – 12/08)
- Establishment of optimal chromatographic techniques for separation of polymers with complex architectures, ICI (03/04 - 07)
- Coupling Field-Flow Fractionation with MALDI/TOF Mass Spectrometry for Analyses of Polydisperse Polymers and Polymer Mixtures, Imperial Chemical Industries (ICI) (7/99-12/02).

Foundations

- Feasibility of Automated Particle Counting for Use in Water Quality Assessment, Edna Bailey Sussman Foundation – Environmental Student Internship (1998).

- Differentiating Bacteria Species by Surface Charge with Field-Flow Fractionation, Edna Bailey Sussman Foundation – Environmental Student Internship (1998).

PUBLICATIONS AND PRESENTATIONS (detailed list below)

Research activities have resulted in more than 50 publications in refereed journals and book chapters and numerous invitations to speak at major conferences, universities, national laboratories, and corporations in the USA, Europe, Brazil, South Africa, and Thailand.

COURSES TAUGHT

Colorado School of Mines

- General chemistry 121 (freshmen)
- General chemistry laboratory 121 & 126 (freshmen)
- Undergraduate analytical chemistry 336 (juniors)
- Quantitative analytical chemistry laboratory 337 (juniors)
- Graduate analytical chemistry 507
- Separations 510 (graduate level)

External Workshops and Short Courses

- Instructor, American Chemical Society 2-day short course, "Modern Methods of Particle Analysis", 1995 – 2005
- Lecturer, American Society for Mass Spectrometry 2-day workshop on "Polymer Mass Spectrometry", 2004
- Instructor, "Environmental Colloids" 3-days workshop, Bangkok, Thailand, 2005
- Lecturer, Summer School on Protein Biotechnology, University of Crete, Greece, 2008.
- Lecturer, ACS Summer School on Green Chemistry, Lecturer, Colorado School of Mines, 2008.

SERVICE AND OUTREACH (National and International)

- Co-organizer, special symposium on "Frontiers in Nanoscale Materials Analyses", American Chemical Society National Conference, August 2008.
- International Union of Pure and Applied Chemistry, Polymer Characterization Committee, 2007-present
- American Chemical Society, Membership Committee, Analytical Chemistry, 2003
- Faculty Opponent, Ph.D. Defense, University of Lund, Lund, Sweden, 2003
- Board member, Junior Development Faculty Program, US Information Agency
- Coordinator of "Project Bookshare": arranged contributions and identified source of funding to send 20 tons of analytical chemistry textbooks and journals to Mahidol University, Thailand, for distribution to 14 other university libraries throughout Thailand, 2002
- Hosted and co-organized Ninth International Field-Flow Fractionation Symposium in Golden, Colorado, 2001
- Session organizer and chair at numerous national and international conferences (1991 – present).
- Member, International Field-Flow Fractionation Scientific Committee, 1999 - present
- Secretary/Treasurer, Intermountain Section, Society for Applied Spectroscopy, 1992 - 1994
- Reviewer for the journals *Analytical Chemistry, Journal of Chromatography, Journal of Separation Science, Macromolecules, Biomacromolecules, Pharmaceutical Biotechnology,*

Journal of American Chemical Society, Journal of Physical Chemistry, *Journal of Membrane Science*, *Nanomedicine.*

- Grant proposal reviewer for the National Science Foundation, Department of Energy, American Chemical Society

PROFESSIONAL AFFILIATIONS

American Chemical Society, American Society of Mass Spectrometry, California Separation Science Society, Materials Research Society

PUBLICATIONS

(aka S. Kim Ratanathanawongs)

1. T. Szell, A. Brandt and S. Ratanathanawongs, "Two New Thiachalcones", *J. Chem. Eng. Data*, **26**, 230 (1981).
2. S. K. Ratanathanawongs and S. R. Crouch, "Development of a Selective Post-column Detector for Phenols Separated by High Performance Liquid Chromatography", *Anal. Chim. Acta*, **192**, 277-87 (1987).
3. S. K. Ratanathanawongs and J. C. Giddings, "High Speed Separation of HPLC Silica by Flow/Hyperlayer Field-Flow Fractionation", *J. Chromatogr.*, **467**, 341-56, (1989).
4. C. L. M. Stults, P. R. Kraus, S. K. Ratanathanawongs, C. J. Patton and S. R. Crouch, "Comparison of Continuous Flow Analysis Techniques", *J. Chem. Ed.*, **66**, 1060-62 (1989).
5. S. K. Ratanathanawongs and J. C. Giddings, "Particle Size Characterizations from 0.01 μm to 50 μm by Flow Field-Flow Fractionation", *Polymeric Materials: Science and Engineering Preprints*, **62**, 181-185 (1990).
6. S. K. Ratanathanawongs and J. C. Giddings, "Particle Size Analysis Using Flow Field-Flow Fractionation", *Polymeric Materials: Science and Engineering Preprints*, **65**, 24-26 (1991).
7. J. C. Giddings, S. K. Ratanathanawongs, and M. H. Moon, "Field-Flow Fractionation: A Versatile Technology for Particle Characterization in the Size Range 10^{-3} to 10^{2} Micrometers", *KONA: Powder and Particle*, **9**, 200-17 (1991).
8. S. K. Ratanathanawongs and J. C. Giddings: "Separation and Characterization of 0.01 - 50 μm Particles Using Flow Field-Flow Fractionation." pp. 229-46, Chapter 15 in Particle Size Distribution II (ACS Symposium Series Volume No. 472), T. Provder, Ed., American Chemical Society, Washington D.C., 1991.
9. S. K . Ratanathanawongs and J. C. Giddings, "Dual Field and Flow Programming in Lift Hyperlayer Field-Flow Fractionation", *Anal. Chem.*, **64**, 6-15 (1992).
10. S. K. Ratanathanawongs and J. C. Giddings, "Particle Size Analysis Using Flow Field-Flow Fractionation", Chapter 2 in Chromatography of Polymers: Characterization by SEC and FFF (ACS Symposium Series Volume No. 521), pp. 13-29, T. Provder, Ed., American Chemical Society, Washington D.C., 1993.
11. S. K. Ratanathanawongs and J. C. Giddings, "Characterization of Core-Shell Carboxylated Latexes Using Sedimentation and Flow Field-Flow Fractionation", *Polymeric Materials: Science and Engineering Preprints*, **70**, 26-7 (1994).

12. J. C. Giddings, S. K. Ratanathanawongs, G. Liu, B. Tjelta, M. H. Moon, M. E. Hansen, and B. N. Barman, " Characterization of Colloidal and Particulate Silica by Field-Flow Fractionation", Chapter 16 in The Colloid Chemistry of Silica (Advances in Chemistry Series No. 234), pp. 309-340, H. Bergna, Ed., American Chemical Society, Washington, D.C., 1994.
13. S. K. Ratanathanawongs and J. C. Giddings, "Rapid Size Characterization of Chromatographic Silicas by Flow Field-Flow Fractionation", *Chromatographia*, **38**, 545-54 (1994).
14. M. E. Schimpf, S. K. Ratanathanawongs, and M. E. Hansen, "Size-based Characterization of Industrial Materials by Field-Flow Fractionation*", Adv. Powder Metall. Part. Mater.*, 1, 203-213 (1995).
15. A. M. Botana, S. K. Ratanathanawongs, and J. C. Giddings, "Field Strength Programming in Flow Field-Flow Fractionation", *J. Microcol.Sep.,* **7**, 395-402 (1995)
16. S. K. Ratanathanawongs, P. M. Shiundu, and J. C. Giddings, "Size and Compositional Studies of Core-Shell Latexes Using Flow and Thermal Field-Flow Fractionation", *Colloids and Surfaces A: Physicochem. Eng. Aspects*, **105**, 243-50 (1995).
17. S. K. Ratanathanawongs Williams, "Field-Flow Fractionation of Macromolecules: Principles and Practice", Proceedings from the Second International Conference on Molecular Mass Characterization of Synthetic and Natural Polymers, Bradford University Research Ltd., United Kingdom, 1996.
18. K. D. Jensen, S. K Ratanathanawongs Williams, and J. C. Giddings, "High Speed Particle Separation and Steric Inversion in Thin Flow Field-Flow Fractionation Channels", *J. Chromatogr.*, **746**, 137-45 (1996).
19. S. K. Ratanathanawongs Williams, G. M. Raner, W. E. Ellis, Jr., and J. C. Giddings, "Separation of Protein Inclusion Bodies from *E. coli* Cell Lysates Using Sedimentation Field-Flow Fractionation", *J. Microcol. Sep.,* **9**, 233-239 (1997).
20. S. K. Ratanathanawongs Williams and R. G. Keil, "Monitoring Biological and Physical Reactivity of Dextran Carbohydrates in Seawater Incubations Using Flow Field-Flow Fractionation", *J. Liq. Chromatogr. & Rel. Technol.*, **20**, 2815-2833 (1997).
21. H. Lee, K. Ratanathanawongs Williams, and J. C. Giddings, "Particle Size Analysis of Dilute Environmental Colloids by Flow Field-Flow Fractionation Using an Opposed Flow Sample Concentration Technique", *Anal. Chem.*, **70**, 2495-2503 (1998).
22. S. K. Ratanathanawongs Williams, H. K. Lee, and M. M. Turner, "Size Characterization of Magnetic Cell Sorting MicroBeads Using Field-Flow Fractionation and Photon Correlation Spectroscopy", *J. Magnetism & Magnetic Materials*, **194**, 248-53 (1999).
23. S. K. Ratanathanawongs Williams, "Flow FFF", in *Field-Flow Fractionation Handbook*, M.E. Schimpf, K.D. Caldwell, and J.C. Giddings, eds., Wiley Science, Chapter II-11 (2000).
24. S. K. Ratanathanawongs Williams and J. C. Giddings, " Sample Recovery" in *Field-Flow Fractionation Handbook*, M.E. Schimpf, K.D. Caldwell, and J.C. Giddings, eds., Wiley Science, Chapter II-7 (2000).
25. S. K. Ratanathanawongs Williams and M. A. Benincasa, "Field-Flow Fractionation Analysis of Polymers and Rubbers", in *Encyclopedia of Analytical Chemistry: Instrumentation and Applications*, Wiley, 2000.

26. S. Saenton, H.K. Lee, Y. Gao, J. Ranville, and S. K. Ratanathanawongs Williams, "Evaluation of Different Field-Flow Fractionation Techniques for Separating Bacteria", *Sep. Sci. Technol*., **35**, 1761-1775 (2000).
27. G. Kassalainen and S. K. Ratanathanawongs Williams, "Protein Separations by Flow Field-Flow Fractionation", in *Encyclopedia of Chromatography*, Chapter 240, pp 680-683, Marcel Dekker, New York, 2001.
28. H. K. Lee, S. K. Ratanathanawongs Williams, S. Dean Anderson, T. J. Anchordoquy, "Analysis of Self-Assembled Cationic Lipid-DNA Gene Carrier Complexes using Flow FFF and Light Scattering", *Anal. Chem.*, **73**, 837-843 (2001).
29. Galina E. Kassalainen, S. Kim R. Williams, "Coupling MALDI-TOF MS with Thermal Field-Flow Fractionation (ThFFF) for the Analysis of Synthetic Polymers*", Proc. 49th ASMS Conf.*, Chicago, 2001.
30. R. Hartmann and S.K. Ratanathanawongs Williams, "Flow Field-Flow Fractionation as an Analytical Technique to Rapidly Quantitate Membrane Fouling", *J. Membr. Sci*., **209**, 93-106 (2002).
31. S.K. Ratanathanawongs Williams, H.K. Lee, and B. Butler-Veytia, "Determining the Particle Size Distributions of Titanium Dioxide Using Sedimentation Field-Flow Fractionation and Photon Correlation Spectroscopy" in *Service Life Prediction Methodology and Metrologies*, J.W. Martin and D.R. Bauer, Eds., ACS Symp. Ser. 805, **2002**, ACS, Washington, D.C., pp. 285-298.
32. P.M. Shiundu, K.R. Williams, "Thermal Field-Flow Fractionation for Particle Analysis: Opportunities and Challenges", *Polymeric Materials: Science and Engineering*, **87**, 342-344 (2002).
33. K. R. Williams, G. E. Kassalainen, and F. Basile, "Thermal Field-Flow Fractionation with MALDI-MS For the Analysis of Broad Polydispersity Polymers and Polymer Mixtures", *Proc. 50th ASMS Conf.,* Orlando, 2002.
34. P.M. Shiundu, S.M. Munguti, S.K.R. Williams, "Practical Implications of Ionic Strength in Thermal Field-Flow Fractionation", *J. Chromatogr*., **984**, 67-79 (2003).
35. P.M. Shiundu, S.M. Munguti, and S.K. Ratanathanawongs Williams, "Retention Behavior of Metal Particle Dispersions in Aqueous and Nonaqueous Carriers in Thermal Field-Flow Fractionation*", J. Chromatogr.,* **983**, 163-176 (2003).
36. G. Kassalainen and S.K. Ratanathanawongs Williams, "Coupling Thermal Field-Flow Fractionation and MALDI-TOF Mass Spectrometry for the Analysis of Synthetic Polymers", *Anal. Chem.,* **75**, 1887-1894 (2003).
37. G. Kassalainen and S. K. Ratanathanawongs Williams, "Lowering the Molecular Weight Limit of Thermal Field-Flow Fractionation for Polymer Separations", *J. Chromatogr*., **988**, 285-295 (2003).
38. K. R. Williams and G. E. Kassalainen, "Thermal Field-Flow Fractionation as a Polymer Separation Technique for MALDI-TOF MS", *Polymeric Materials: Science & Engineering Preprints.,* **88**, 26 (2003).

39. H.K. Lee, S. K. Ratanathanawongs Williams, K. L. Wahl, and N. Valentine, "Separation and Identification of Whole Bacteria with Field-Flow Fractionation and MALDI/TOF Mass Spectrometry", *Anal. Chem*., **75**, 2746-2752 (2003).
40. P.M. Shiundu, S.K.R. Williams, "Thermal Field-Flow Fractionation for Particle Analysis: Opportunities and Challenges", *ACS Symp. Ser.* 881, Chapter 12, American Chemical Society, Washington, D.C. (2004).
41. F. Basile, G.E. Kassalainen, S.K.Ratanathanawongs Williams, "A Simple Interface for Direct and Continuous Sample-Matrix Deposition onto a MALDI Probe for Polymer Analysis by Thermal Field-Flow Fractionation and Off-line MALDI-MS", *Anal. Chem.,* **77**, 3008-3012 (2005).
42. S.K. Ratanathanawongs Williams, "Separations and Mass Spectrometry: A Symbiotic Relationship", *Proc. 53rd ASMS Conference* (2005).
43. S.K.R. Williams, "Addressing New Challenges in Polymer Analysis Using FFF and MALDI-MS", Proceedings of the World Polymer Congress – Macro 2006, 41st International Symposium on Macromolecules (2006).
44. D. Li, S. Kim R. Williams, S. Rumbelow, "Quantification of Poly(ethylene glycol) and Poly(propylene glycol) in Alkoxylated Surfactants, Polymer Preprints, American Chemical Society (2006).
45. S.K. Ratanathanawongs Williams, D. Lee, "Field-Flow Fractionation of Proteins, Polysaccharides, Synthetic Polymers, and Supramolecular Assemblies", *J. Sep. Sci*., **29**, 1720-1732 (2006).
46. S.K. Ratanathanawongs Williams, I. Park, E.E. Remsen, M. Moinpour, "New Particle Metrology for CMP Slurries", *Mater. Res. Soc. Symp. Proc*., 991, C-09-01, Materials Research Society (2007).
47. F. Messaud, R. Sanderson, J.R.Runyon, S.K.R Ratanathanawongs Williams, "An Overview on Field-Flow Fractionation Techniques and Their Applications in Separation and Characterization of Polymers", *Prog. Polym. Sci.*, **34**, 351–368 (2009).
48. D. Lee, S. Rumbelow, S.K.R. Williams*, "*Identification and Quantitation of Trace Impurities in Fatty Alcohol Ethoxylates Using HPLC and MALDI-TOF Mass Spectrometry*", Anal. Chim. Acta,* in press.
49. S.K. Ratanathanawongs Williams, L. Cinque, P.M. Shiundu "Size Determination of Nanoparticles Used in Coatings", in Nanotechnology Applications in Coatings", R. Fernando, L.-P. Sung, Eds., American Chemical Society, accepted.
50. C.A. Lohmann, J.E. Engle, W.G. Haseltine, S.K. Ratanathanawongs Williams, "A Rapid Separation Method for Gel Content Determination in Pressure Sensitive Adhesive Dispersions and Acrylic-based Latices for an Industrial Setting", *Anal. Chim. Acta*, submitted.
51. J. Runyon, S.K. Ratanathanawongs Williams, "Flow-through Photon Correlation Spectroscopy as a Detector for Liquid Phase Separations", *Anal. Chim. Acta*, submitted.

INVITED TALKS AND SEMINARS

1. "Particle Size Analysis Using Flow Field-Flow Fractionation", Fourth Chemical Congress of North America, New York City, 1991.
2. "Separation and Characterization of Particles by FFF", Pittsburgh Conference Analytical Chemistry Award Symposium for J. Calvin Giddings, Pittcon, New Orleans, 1992.
3. "Measurement of Physical and Physicochemical Properties Using Field-Flow Fractionation", Chemical Dynamics After Dark Series, University of Utah, Salt Lake City, 1993.
4. "Separation and Characterization of Macromolecules and Particulates Using Field-Flow Fractionation", Brigham Young University, 1994.
5. "Field-Flow Fractionation: A Powerful Technique for the Characterization of Colloids", 207th ACS National Meeting, San Diego, 1994.
6. "Macromolecules to Particulates: Separations and Characterizations Using Field-Flow Fractionation", Malaysian Rubber Institute, Hertsford, England and ICI Paints, Runcorn, England, 1995.
7. "Future Directions of the Field-Flow Fractionation Research Center", Meeting of the Directors of Industrial Research - Analytical Group, Salt Lake City, Utah, 1996.
8. "Field-Flow Fractionation of Macromolecules: Principles and Practice", 2nd International Conference on Molecular Mass Characterisation of Synthetic and Natural Polymers, Windemere, United Kingdom, 1996.
9. "Recent Advances in Flow FFF", HPLC'96, San Francisco, 1996.
10. "Separations in Thin Channels", 212th ACS National Meeting, Orlando, 1996.
11. "Macromolecules to Particles: Separations and Characterizations Using Field-Flow Fractionation", Colorado State University, 1998.
12. "Polymer, Colloid, and Particle Separations and Characterization Using Field-Flow Fractionation", GE Corporate Research Labs, Albany, 1998.
13. "Field-Flow Fractionation: The "New" Kids on the Block in Analytical Separations", Siena College, New York, 1998.
14. "Separation and Characterization of Polymers and Particles Using Field-Flow Fractionation", University of California at Davis, 1999.
15. "Separation and Characterization of Proteins and Particles", BioPharm Conference, Burlingame, CA and Framingham, MA 1999.
16. "Characterization of Coating Constituents by FFF", Second International Symposium on Surface Life Predictions and Metrologies, Monterey, 1999.
17. "Field-Flow Fractionation: Analysis of Polymers, Particles, and Surfaces", Department of Material Science, Colorado School of Mines, 2001.
18. "Field-Flow Fractionation: From Separations of Microorganisms to Probing Interactions at Surfaces", University of Colorado, Boulder, 2001
19. "Membrane-Humics Interactions", United States Filtration Company, San Diego, 2001.
20. "Field-Flow Fractionation: From Separations of Microorganisms to Probing Interactions at Surfaces", University of Colorado Health Science Center, Denver, 2001.

21. "Particle Separation and Characterization Using Field-Flow Fractionation", Pharmacia Corporation, Skokie, Illinois, 2001.
22. "Field-Flow Fractionation of Polymers", National Starch & Chemical Company, Newark, 2002.
23. "Unraveling Complex Samples and Processes Using Field-Flow Fractionation", University of Colorado Health Science Center, 2002.
24. "Thermal Field-Flow Fractionation of Synthetic Polymers", Polymer Separations Symposium, ACS, Orlando, 2002.
25. "Coupling Thermal Field-Flow Fractionation and MALDI TOF Mass Spectrometry", Polymer Characterization Symposium, ACS, Orlando, 2002.
26. "Thermal Field-Flow Fractionation with MALDI-MS for the Analysis of Polymers", American Society of Mass Spectrometry, Orlando, 2002.
27. "Macromolecules to Particles: Separations and Characterizations Using Field-Flow Fractionation", Firmenich, Geneva, Switzerland, 2002
28. "ThFFF-MALDI TOF MS Analysis of Polymers", University of Hamburg, 2002.
29. "Thermal Field-Flow Fractionation for Particle Analysis: Opportunities and Challenges", ACS, Boston, 2002.
30. "Unraveling Complex Samples and Processes Using Field-Flow Fractionation", Cytokinetics, South San Francisco, 2002.
31. "Has the Time Come for Field-Flow Fractionation?", Sandia National Laboratories, 2002.
32. "Unraveling Complex Samples and Processes Using Field-Flow Fractionation", University of California at Davis, 2002.
33. "Understanding Complex Samples and Processes Using Field-Flow Fractionation", Mahidol University, Thailand, 2002.
34. "Understanding Complex Samples and Processes Using Field-Flow Fractionation", Chulalongkorn University, Thailand, 2002.
35. "Thermal Field-Flow Fractionation as a Polymer Separation Technique for MALDI-TOF MS", ACS National Meeting, New Orleans, 2003.
36. "Analysis of whole bacterial cells by flow field-flow fractionation and matrix-assisted laser desorption/ionization time-of-flight mass spectrometry", ACS National Meeting, 2003.
37. "Field-Flow Fractionation/MALDI-TOF Mass Spectrometry of Synthetic Polymers and Whole Cell Bacteria", University of Lund, Sweden, 2003
38. "Field-Flow Fractionation 101", Nektar Therapeutics, San Francisco, 2003.
39. "Field-Flow Fractionation: A Simple Solution to "Large" Problems?", Sandia National Laboratories, 2003.
40. "Analytical Challenges in the Study of Nano- to Micro-Sized Materials", San Francisco State University, 2004.

41. "Separations of Nano- to Micro-Sized Materials Using Field-Flow Fractionation", Sandia National Laboratories (New Mexico), 2004.

42. "Thermal Field-Flow Fractionation as a Polymer Separation Technique for MALDI-TOF MS", American Society of Mass Spectrometry Fall Workshop, Baltimore, 2004.

43. "Separations and Mass Spectrometry: A Symbiotic Relationship", *Keynote Lecture*, 53rd ASMS Conference on Mass Spectrometry, San Antonio, 2005.

44. "Addressing New Challenges in Polymer Analyses Using Field-Flow Fractionation", Procter & Gamble, Cincinnati, 2005.

45. "Field-Flow Fractionation of Polymers", Stamford Seminar Series, Cytec Technologies, Connecticut, 2006.

46. "Addressing New Challenges in Polymer Separations Using Field-Flow Fractionation", World Polymer Congress, Macro 2006, Rio de Janeiro, 2006.

47. S.K.R. Williams "Novel Separation and Characterization Methods for Polymers and Nanoparticles", Polytechnic University (Brooklyn), 2007

48. S.K.R. Williams "Separation, Identification, and Quantitation of Impurities and Byproducts", Nektar Therapeutics, 2007.

49. S.K.R. Williams, "Frontiers in Nanoscale Materials Separations: There is Plenty of Room at the Top", University of California at Riverside, 2007.

50. S.K.R. Williams, "Separation and Characterization of Nanoparticles Using Field-Flow Fractionation and Other Methods", National Institute of Standards and Technology, Maryland, 2007.

51. S.K.R. Williams, "Nanoparticle Separations Using Field-Flow Fractionation", National Cancer Institute, Frederick, 2007.

52. S.K.R. Williams, "Separation and Characterization of Nanoparticles Using Field-Flow Fractionation", Nanotechnology in Coatings: Emerging Applications, Orlando, 2008.

53. S. K. R. Williams, ""Advance Analytical Technologies for Biomacromolecules: Field-Flow Fractionation and Light Scattering", Protein Biotechnology Workshop, Crete, Greece, 2008.

54. S.K.R. Williams, "Thermal Field-Flow Fractionation for Homopolymers, Copolymers, and Microgels", 10th Annual UNESO/IUPAC Conference on Macromolecules & Materials, Mpumalanga, South Africa, 2008.

55. S.K.R. Williams, "Analytical Separations: There is Plenty of Room at the Top", University of Akron, 2008.

56. S.K.R. Williams, *Keynote Lecture* "Thermal FFF for Polymers: an Academic, Industrial, and Government Partnership" , 4th International Symposium on the Separation and Characterization of Macromolecules (SCM-4), Amsterdam, 2009

57. S.K.R. Williams, "Green Separations ", University of Puerto Rico at Rio Piedras, Puerto Rico, 2009.