

BIOGRAPHICAL SKETCH

Abdul MALIK, Ph.D.

Professor, Department of Chemistry, University of South Florida,
4202 E. Fowler Avenue, CHE 205, Tampa, FL 33620-5250.

Phone: 813-974-9688; FAX: 813-974-3203

E-mail: malik@usf.edu;

<https://www.usf.edu/arts-sciences/departments/chemistry/faculty/malik.aspx>

Education: **Ph.D.**, Soviet Academy of Sciences (Former), Moscow, 1985.
 M.S., Peoples' Friendship University, Moscow, 1980.

Citizenship: **USA**

Professional Positions:

Apr. 2017-Present: **Professor**, Department of Chemistry, University of South Florida,
Tampa, Florida, USA.

Apr. 96-Present: **Coordinator**, Analytical Chemistry Division, Department of
Chemistry, University of South Florida, Tampa, Florida, USA.

Aug. 99-Apr. 2017: **Associate Professor**, Department of Chemistry, University of
South Florida, Tampa, Florida, USA.

Aug. '94-Aug. 99: **Assistant Professor** of Chemistry, University of South Florida,
Tampa, Florida, USA.

Sep. '92-Jul. '94: **Research Assistant Professor** of Chemistry, Brigham Young
Univ., Provo, Utah, USA.

Jan. '91-Aug. '92: **Postdoctoral Research Associate**, Department of Chemistry,
Brigham Young University, Provo, Utah, USA.

Oct. '89-Dec. '90: **Research Fellow (Japanese Ministry of Education)**, Toyohashi
University of Technology, Toyohashi, Japan.

Areas of Specialization

Analytical Separations: Sol-Gel coatings and monolithic beds in analytical
separations, high resolution gas chromatography (GC), high-
performance liquid chromatography (HPLC), capillary
electrophoresis (CE), supercritical fluid chromatography
(SFC), biomedical and environmental applications of
chromatographic, electrophoretic, and hyphenated
techniques.

Sample Preparation: Solid-phase microextraction (SPME), capillary microextraction (CME), supercritical fluid extraction (SFE).

RESEARCH ACCOMPLISHMENTS

Research Productivity Metrics:

Hirsch Index (h-index): **33** (According to Google Scholar)

i10-index: **80** (According to Google Scholar)

Number of citations: > **5000**

Publications: **155** publications including journal and patent publications.

Patents: **19**

Honors and Awards

- Member, Editorial Advisory Board of *Sample Preparation*, **2012-**
- NSF Review Panel, **2011**
- Member, **National** Academy of Inventors, **2010-**
- USF Honor for **Excellence in Teaching and Mentorship at the Doctoral Level**, as Major Professor of Scott S. Segro, winner of USF Outstanding Ph.D. Dissertation Award, **2010**.
- USF **Excellence in Innovation** Award, **2009**.
- **Charter member**, USF Academy of Inventors, **2009-**
- Member, **International Panel of Judges** for Prestigious Leslie S. Etre Award in Chromatography, **2007-2010**.
- **Nominated** for **Beneditti-Pichler Award** of the American Microchemical Society, **2006**
- **Guest Editor**, *Journal of Chromatography A*, Vol. 1025, No. 1, **2004**.
- **General Chair**, 5th International Symposium on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, USA, March 5-7, **2003**.
- Lead Author of pioneering research in the area of sol-gel column technology that has **made the front covers** of:
 - (a) ***Journal of Separation Science*, 2018**, vol. 44, No. 7.

- (b) Extensive Sample Preparation Resource titled “**The Wiley Handbook of Sample Preparation**,” Edited by J. Pawliszyn, Wiley, Hoboken, NJ, USA, 2010.
 - (c) **Popular Analytical Chemistry Textbook** by Daniel C. Harris, (Ref. **Quantitative Chemical Analysis**, 6th edition, Freeman, New York, USA, 2003);
 - (d) **Analytical Chemistry** – the premier journal in the field of our research (Ref. **Anal. Chem.** 1997, 69, 4556-4566).
- **Editorial Advisory Board Member:** *Journal of Microcolumn Separations* (2001).
Sample Preparation (2012-)
 - **Member of the Scientific Committee**, International Symposium on Advances in Extraction Technologies (ExTech) – an annual series symposium, since 2000.
 - Our research on sol-gel monolithic column technology in capillary electrochromatography was recognized by **American Laboratory Magazine** (July 2000, News Edition, Editor’s page) as “**Best of Both worlds.**”

Professional Affiliations:

- Member, Editorial Advisory Board of International Journal *Sample Preparation*, 2012-
- **Panelist**, NSF Grant Review Panel 2011-
- Member, **National** Academy of Inventors, 2010-
- **Charter Member**, USF Academy of Inventors, 2009-.
- **Member**, Florida **Center of Excellence** for Biomolecular Identification and Targeted Therapeutics (FCoE BITT), since 2006.
- **Reviewer**, NIH Scientific Review Panel (Chemistry and Biophysics Panel, Study section ZRG1BCMML10) for SBIR STTR Grants, since 2004.
- **Member of the Editorial Advisory Board** of the International Journal: *Journal of Microcolumn Separations* (2001)
- **Member of the Scientific Committee**, International Symposium on Advances in Extraction Technologies (ExTech) – an annual series symposium, since 2000.
- **Scientific reviewer** for NSF and DOE grant applications, since 1995
- **Member**, American Chemical Society, since 1992.

National and International Symposia-related Activities:

General Chair: Fifth **International Symposium** on the Advances in Extraction Technologies (**ExTech 2003**, March 5-7, **2003**, St. Pete Beach, Florida, **USA**).

Co-Chair: Pittsburgh Conference **2010**, Symposium on “*Emerging Materials in Separation Science*,” Orlando, FL, USA, Feb 28 - Mar 5, **2010**.

Session Chair: At International Symposia on Chromatography held in Belgium, Brazil, China, Colombia, Italy, Greece, Malaysia, Norway, Poland, Portugal, Spain, USA.

Presentations: **176** (At international Symposia held in USA, Belgium, Brazil, Canada, China, Colombia, France, Germany, Greece, Italy, Japan, Malaysia, Norway, Poland, and Singapore, South Korea), including:

Keynote lectures: **9**
Plenary lectures: **16**
Invited lectures: **100**

Research Funding:

(1) **Title:** *Collaborative Research: Synthesis and Evaluation of Embedded pH Indicator Films for Aquatic Sensor Applications*

Application No. 1334597

Funding Agency: National Science Foundation (NSF)

Program Name: Ocean Technology and Interdisciplinary Coordination

Proposed Period: September 01, 2013 – August 31, 2016

Role: Co-PI (PI in the original submission)

Resubmission Date: Feb 14, 2014

Status: Pending (Revised Proposal submitted to NSF)

Requested Amount: **\$400,126.00**

(2) **Title:** *Germania-based Sol-gel Organic-Inorganic Hybrid Materials for the Isolation and Preconcentration of Phosphoproteins and Phosphopeptides*

Grant Application #: 1R01GM109124-01

Funding Agency: National Institutes of Health (NIH)

Program Name: Enabling Bioanalytical and Imaging Technologies

Proposed Period: July 01, 2013 – June 30, 2016

Role: PI

Submission Date: Feb 5, 2013

- Status:** Under Revision
Requested Amount: \$1,186,859.00
- (03) **Title:** *REU Site: Chemistry Summer Enhanced Experience
Discovering Science, Chem-SEEDS*
Funding Agency: NSF
Program Name: REU
Proposal Status: FUNDED
Funding Period: February 1, 2012 – January 31, 2015
Role: Faculty Mentor
Grant Amount: 398,688
- (04) **Title:** *GeO₂-SiO₂ Sol-Gel Collaboration*
Funding Agency: Agilent Technologies, Inc. (University Relations Program)
Proposal Status: FUNDED
Date: May 2011– April 2012
Role: PI
Grant Amount: \$75,000.00 (\$50,000.00 in cash and \$25,000 in equipment)
- (05) **Title:** *Electrically Charged Sol-Gel Stationary Phases for Early
Diagnosis of Diseases via Preconcentration and Identification
of Ultra Trace Amounts of Biomarker Molecules*
Funding Agency: Florida Center of Excellence – Biomolecular Identification
and Targeted Therapeutics (FCoE-BITT)
Proposal Status: FUNDED
Date: 2009 – November 2010
Role: PI
Grant Amount: \$75,000.00
- (06) **Title:** “Sensory Knowledge-based Interface Science (SKINS)”
Funding Agency: NSF IGERT program
Proposal Status: FUNDED
Grant #: DGE- 0221681
Date: 2003-2007
Role: Co-Investigator
Grant Amount: \$3,078,000.00
- (07) **Title:** MRI: Acquisition of Deep Reactive Ion Etching Tool for Interdisciplinary
Research at the University of South Florida (NSF Proposal No. 0619653)
Funding Agency: NSF
Proposal Status: FUNDED
Date: September 15, 2006 – September 14, 2007
Award ID: 0619653
Role: Co-PI
Grant Amount: \$346,000.00

- (08) **Granting Agency: NSF**
Grant Program: Bridge to the Doctorate (FGLSAMP, USF)
Proposal Status: FUNDED
Grant Amount: 987.5K
Date: (2004-2009)
Role: Faculty Mentor
- (09) **Granting Agency: Office of Naval Research (ONR)**
Title: Preconcentration and Capillary Electrophoretic Analysis of Trace Amino Acids in Seawater
Proposal Status: FUNDED
Date: 2002-2006
Role: PI (Subcontract)
Grant Amount: \$130 K

PATENTS: (Lead Inventor: **Bolded**)

Patents Issued

19. **A. Malik**, A.M. Shearrow, Method of Making Ionic Liquid Mediated Sol-gel Sorbents, **United States Patent No. US 9,555,394** (January 31, **2017**).
18. **A. Malik**, S.S. Segro, "Materials and Methods for Capillary Microextraction in Combination with High-performance Liquid Chromatography," **United States Patent No. US 9,528, 921** (December 27, **2016**).
17. **A. Malik**, A. Kabir, C. Shende, "High Efficiency Sol-Gel Gas Chromatography Column", **United States Patent No. US 8,685,240** (April 1, **2014**).
16. **A. Malik**, A.M. Shearrow, Ionic Liquid Mediated Sol-gel Sorbents," **United States Patent No. US 8,623,279** (January 7, **2014**).
15. **A. Malik**, E.B. Turner, S.S. Segro, "Germania-silica-based Sol-gel Monolithic Column and Use Thereof," **United States Patent No. US 8,603,833** (December 10, **2013**).
14. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and Method of Making," **United States Patent No. US 8,597,508** (December 3, **2013**).
13. **A. Malik**, W. Li, D.P. Fries, "Sol-Gel Coatings for On-line Preconcentration in Capillary Electrophoresis," **United States Patent No. US 8,241,476** (August 14, **2012**).

12. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and Method of Making," **United States Patent No. US 7,947,174** (May 24, **2011**).
11. **A. Malik**, T.-Y. Kim, "Titania-based Coating for Capillary Microextraction," **United States Patent No. US 7,622,191 B2** (November 24, **2009**).
10. **A. Malik**, W. Li, D. P. Fries, "Method of Using Sol-Gel Coatings for On-line Preconcentration of Amino Acids in Capillary Electrophoresis," **United States Patent No. US 7,407,568** (August 5, **2008**).
09. **A. Malik**, J.D. Hayes, "Sol-Gel Open Tubular ODS Columns with Charged Inner Surface for Capillary Electrochromatography," **United States Patent No. US 6,998,040** (February 14, **2006**).
08. **A. Malik**, "Sample Preconcentration Tubes with Sol-gel Surface coatings and/or Sol-gel Monolithic Beds," **United States Patent No. US 6,783,680 B2** (August 31, **2004**).
07. **A. Malik**, D.X. Wang, "Solid-phase Microextraction Fiber Structure and Method of Making" **United States Patent No. US 6759126** (July 6, **2004**).
06. **A. Malik**, D.X. Wang, "Capillary Column and Method of Making," **European Patent No. EP1105723** (June 13, **2001**).
05. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and Method of Making," **Australian Patent No. AU3810901** (Aug 20, **2001**).
04. **A. Malik**, D.X. Wang, "Capillary Column and Method of Making," **Australian Patent No. AU765881** (January 14, **2000**).
03. **B.E. Rossiter**, J.S. Bradshaw, S.L. Reese, A. Malik, and M.L. Lee, "Polysiloxanes containing pendant cyano-substituted biphenyls as stationary phases for chromatographic columns," **United States Patent No. US 5,262,052** (Nov. 16, **1993**).
02. **A. Malik**, V.G. Berezkin, V.S. Gavrichev, E.P. Skornyakov, "Khromatograficheskaya kolonka I sposob iyo izgotovleniya (Chromatographic column and a method for its preparation)," **USSR Inventors Certificate (Patent) No. SU 1117527** (Cl.G01N31/08), Otkryt. Izobret. (Discoveries &Inventions), **1984**, Bulletin # 37, p.114 (in Russian).
01. **A. Malik**, V.S. Gavrichev, V.G. Berezkin, V.N. Khokhlov, E.P. Skornyakov, "Sposob Izgotovleniya kapillyarnoi nasadochnoi kolonki (A method for the preparation of capillary packed column)," **USSR Inventors Certificate (Patent) No. SU 110625** (Cl. 01N31/08), **USSR Invention Bulletin 1984**, No. 28 (in Russian).

World Intellectual Property Organization (WIPO) Patents:

09. **A. Malik**, S.S. Segro, "Materials and Methods for Capillary Microextraction in Combination with High-Performance Liquid Chromatography," PCT, WIPO Patent WO 2011-131737 A2, **2011**.
08. **A. Malik**, A. M. Shearrow, "Ionic Liquid-Mediated Sol-gel Sorbents," PCT, WIPO Patent WO 2010/135660 A2 (International Publication Date: November 25, **2010**).
07. **A. Malik**, A. Kabir, "Sol-Gel Dendron Separation and Extraction Column," PCT, WIPO Patent WO 2002/094410 A1 (International Publication Date: November 28, **2002**).
06. **A. Malik**, A. Kabir, "High Efficiency Sol-Gel Chromatography Column," PCT, WIPO Patent WO 2002/ 072225 A1 (International Publication Date: September 19, **2002**).
05. **A. Malik**, J.D. Hayes, "Sol-Gel Open Tubular ODS Columns with Charged Inner Surface for Capillary Electrochromatography," PCT, WIPO Patent WO 2002/ 059591 A1 (International Publication Date: August 1, **2002**).
04. **A. Malik**, "Sample Preconcentration Tubes with Sol-gel Coatings and Monolithic Beds," PCT, WIPO Patent WO 2002/055986 A2 (International Publication Date: July 18, **2002**).
03. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and method of Making," PCT, WIPO Patent WO 2001/058562 A1 (International Publication Date: August 16, **2001**).
02. **A. Malik**, D.X. Wang, "Solid-Phase Microextraction Fiber Structure and Method of Making," PCT, WIPO Patent WO 2000/017429 A1 (International Publication Date: March 30, **2000**).
01. **A. Malik**, D.X. Wang, "Capillary Column and Method of Making," PCT, WIPO Patent WO 2000/011463 A1 (International Publication Date: March 2, **2000**).

Patent Applications Pending

06. **A. Malik**, A. Alhendal, Metal Oxide-based Biocompatible Hybrid Sorbent for the Extraction and Enrichment of Catecholamine Neurotransmitters and Related Compounds, and Method of Synthesis, US Patent Application No. **15/639,449** (Filed on June 30, **2017**)

05. **A. Malik**, E. Seyyal, Dual Ligand Sol-gel Sorbent Combining Superhydrophobicity and Pi-Pi Interaction, US Patent Application No. **15/813,799** (Filed on November 15, **2017**)
04. **A. Malik**, M.-P. Tran, Tantalum-based Sorbent for Online/Offline Extraction and Preconcentration of Catecholamine Neurotransmitters as well as Other Chemical Species Prior to Chromatographic Analysis, and Method for Chemical Synthesis of the Same. US Provisional Patent Application No. 62/524,937 (Submitted June 26, **2017**).
03. **A. Malik**, A. Alhendal, S. Kesani, Niobia-based Sorbents and Methods for Phosphopeptide Enrichment, and Synthesis of the same. US Provisional Patent Application No. 62/524,928 (Submitted June 26, **2017**).
02. **A. Malik**, E. Seyyal, Dual Ligand Sol-gel Sorbent Combining Superhydrophobicity and Pi-Pi Interaction, US Provisional Patent Application No. 62/422,417 (Submitted November 15, **2016**, USF Ref. No. 16B181PR).
01. **A. Malik**, C.-L. Jiang, "Particles with a Germanium-based External Layer," US Patent Application No. 14212673, Filed on Mar 14, **2014**.

PUBLICATIONS (Lead Author: **Bolded**)

155. S. Kesani, **A. Malik**, Sol-gel niobia sorbent with a positively charged octadecyl ligand providing enhanced enrichment of nucleotides and organophosphorus pesticides in capillary microextraction for online HPLC analysis, *J. Sep. Sci.* **2018**, 41(7), 1663-1673.
154. **A. Malik**, A. Alhendal. (Metal Oxide-based Biocompatible Hybrid Sorbent for the Extraction and Preconcentration of Catecholamine and Related Compounds, and Method of Synthesis, US Patent Publication No. 2018-0001298 A1), pp. 12 (**2018**).
153. M. Tran, E.B. Turner, S.S. Segro, E. Seyyal, **A. Malik**, "Tantalum-based Sol-gel Coating for Capillary Microextraction on-line Coupled to High-Performance Liquid Chromatography," *J. Chromatogr. A* 2017, 1522, 38-47. (Online published on Sep 22, **2017**; <https://doi.org/10.1016/j.chroma.2017.09.048>).
152. E. Seyyal, **A. Malik**, "Silica- and germanium-based dual-ligand sol-gel organic-inorganic hybrid sorbents combining superhydrophobicity and π - π interaction. The role of inorganic substrate in sol-gel capillary microextraction", *Anal. Chim. Acta* **2017**, 964, 96-111.

151. **A. Malik**, A.M. Shearrow, "Method of Making Ionic Liquid Mediated Sol-gel Sorbents", **United States Patent No. US 9,555,394** (January 31, **2017**).
150. **A. Malik**, S.S. Segro, "Materials and Methods for Capillary Microextraction in Combination with High-performance Liquid Chromatography," **United States Patent No. US 9,528,921** (December 27, **2016**).
149. A. Alhendal, S. Mengis, J. Matthews, **A. Malik**, Nonhydrolytic Sol-gel Approach to Facile Creation of Surface-bonded Zirconia Organic-Inorganic Hybrid Coatings for Sample Preparation. I. Capillary Microextraction of Catecholamine Neurotransmitters, *J Chromatogr. A* **2016**, 1468, 23-32.
148. **A. Malik**, A. Kabir, C. Shende, "High Efficiency Sol-Gel Gas Chromatography column", **United States Patent No. US 8,685,240** (April 1, **2014**).
147. **A. Malik**, A.M. Shearrow, "Method of Making Ionic Liquid Mediated Sol-gel Sorbents", United States Patent Publication No. US 2014/0057048 A1 (February 27, **2014**).
146. **A. Malik**, A.M. Shearrow, Ionic Liquid Mediated Sol-gel Sorbents," **United States Patent No. US 8,623,279** (January 7, **2014**).
145. A. Kabir, K.G. Furton, **A. Malik**, "Innovations in Sol-gel Microextraction Phases for Solvent-free Sample Preparation in Analytical Chemistry", *Trends Anal. Chem.*, **2013**, 45, 197-218.
144. **A. Malik**, E.B. Turner, S.S. Segro, "Germania-silica-based Sol-gel Monolithic Column and Use Thereof," **United States Patent No. US 8,603,833** (December 10, **2013**).
143. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and Method of Making," **United States Patent No. US 8,597,508** (December 3, **2013**).
142. **A. Malik**, S.S. Segro, Materials and Methods for Capillary Microextraction in Combination with High-performance Liquid Chromatography, United States Patent Publication No. US 2013/0071945 A1, March 21, **2013**.
141. **A. Malik**, W. Li, D.P. Fries, "Sol-Gel Coatings for On-line Preconcentration in Capillary Electrophoresis," **United States Patent No. US 8,241,476** (August 14, **2012**).
140. M. Mclean, **A. Malik**, "Sol-Gel Materials in Analytical Microextraction," In *Comprehensive Analytical Chemistry*, Vol. 2, Chapter 2.16, (J. Pawliszyn and H.L. Lord, Eds.), Elsevier, Academic Press: Oxford, UK, **2012**, pp. 311-329.

139. **A. Malik**, A. M. Shearrow, "Ionic Liquid-Mediated Sol-gel Sorbents," US Patent Publication No. US 2012/0128551 A1, May 24, **2012** (filed on Nov. 21, 2011).
138. **A. Malik**, C.-L. Jiang, L. Fang, "Separation Column with Germania-based Sol-gel Stationary phase," United States Patent Publication No. US 20120024790 A1 (**2012**).
137. **A. Malik**, E.B. Turner, S.S. Segro, "Germania-Silica-based Sol-gel Monolith and Uses Thereof", **US Patent Publication** No. US 2012/0004434 A1, January 5, **2012**.
136. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and Method of Making," **United States Patent Publication** No. US 2012/0000850, Published on January 5, **2012**.
135. **A. Malik**, S.S. Segro, E.B. Turner, "Germania-Silica-Based Sol-Gel Monolith and Uses Thereof," **US Patent Publication** No. US 2012/0004434 A1 (Jan 5, 2012).
134. **A. Malik**, S.S. Segro, "Materials and Methods for Capillary Microextraction in Combination with High-Performance Liquid Chromatography," PCT Patent Publication No. WO 2011/131737 A2, **2011**.
133. **A. Malik**, J.D. Hayes, "Sol-gel Monolithic Column with Optical Window and Method of Making," **United States Patent** No. US 7,947,174 B2 (May 24, **2011**).
132. **A. Malik**, S.S. Segro, "Materials and Methods for Capillary Microextraction in Combination with High-Performance Liquid Chromatography," International Patent Publication No. WO 2011-131737 A3, World Intellectual Property Organization (WIPO), **2011**.
131. **A. Malik**, A. M. Shearrow, "Ionic Liquid-Mediated Sol-gel Sorbents," PCT Patent Publication No. WO 2010-135660 A3, **2010**.
130. S. S. Segro, M.P. Tran, S. Kesani, A. Alhendal, E. B. Turner, **A. Malik**, "Sol-gel microextraction phases for sample preconcentration in chromatographic analysis" **Invited review paper**, *J. Sep. Sci.*, **2010**, 33 (19), 3075-3096.
129. **A. Malik**, A. M. Shearrow, "Ionic Liquid-Mediated Sol-gel Sorbents," International Patent Publication No. WO 2010/135660 A2, **2010**.
128. S. S. Segro, **A. Malik**, "High-temperature solvent stability of sol-gel germania triblock polymer coatings in capillary microextraction on-line coupled to high-performance liquid chromatography," *J. Chromatogr. A* **2010**, 1217 (37), 5746-5752.

127. S. S. Segro, **A. Malik**, "Sol-Gel Coatings and Monoliths in Analytical Sample Preparation," In *Handbook of Sample Preparation* (ISBN: 978-0-470-09934-6, Edited by J. Pawliszyn and H. Lord), Chapter 22, pp. 419-443 (**2010**).
126. S.S. Segro, J.C. Triplett, **A. Malik**, "Sol-Gel Germania Tri-Block Polymer Coatings of Exceptional pH Stability in Capillary Microextraction On-Line Coupled to High-Performance Liquid Chromatography," *Anal. Chem.* **2010**, 82 (10), 4107-4113.
125. **A. Malik**, T.-Y. Kim, "Titania-based Coating for Capillary Microextraction," **United States Patent Publication** No. US 2010/0112208 A1, May 6, **2010**.
124. **A. Malik**, T.-Y. Kim, "Titania-based Coating for Capillary Microextraction," **United States Patent** No. US 7,622,191 B2 (November 24, **2009**).
123. D.X. Wang, **A. Malik**, "Extended research on the role of the attaching arms in separation of a chiral lactone on sol-gel gas chromatographic columns with chirasil-cyclodextrin as stationary phase, Nanjing Shida Xuebao, Ziran Kexueban **2009**, 32(3), 61-65.
122. **A. Malik**, K. Alhooshani, "Tube Structure with Sol-gel Zirconia Coating," US Patent Publication No.: US 2009/0250349 A1, October 8, **2009**.
121. S. Segro, **A. Malik**, "Sol-gel Coatings with Covalently attached Methyl-, Octyl-, and Octadecyl Ligands for Capillary Microextraction. Effects of Alkyl Chain Length and Sol-gel Precursor Concentration on Extraction Behavior." *J. Chromatogr. A* **2009**, 1216 (45), 7677-7686.
120. A. M. Shearrow, S. Bhansali, **A. Malik**, "Ionic liquid-mediated bis[(3-methyldimethoxysilyl)propyl] polypropylene oxide-based polar sol-gel coatings for capillary microextraction," *J. Chromatogr. A* **2009**, 1216 (36), 6349-6355.
119. A. M. Shearrow, G. A. Harris, L. Fang, P.K. Sekhar, L.T. Nguyen, E.B. Turner, S. Bhansali, **A. Malik**, "Ionic Liquid-mediated Sol-gel Coatings for Capillary Microextraction," *J. Chromatogr. A* **2009**, 1216 (29), 5449-5458.
118. S.S. Segro, Y. Cabezas, **A. Malik**, "Ultra-high stability, pH-resistant sol-gel titania poly(tetrahydrofuran) coating for capillary microextraction on-line coupled to high-performance liquid chromatography" *J. Chromatogr. A* **2009**, 1216 (20), 4329-4338.
117. **A. Malik**, "Multidimensional Liquid Chromatography: Theory and Applications in Industrial Chemistry and the Life Sciences edited by Steven A. Cohen and Mark R. Schure, *J. Am. Chem. Soc.* **2008**, 130 (45), 1517-1518 (Book review).

116. S. Segro, **A. Malik**, "Solvent-resistant Sol-gel Polydimethyldiphenylsiloxane Coating for on-line Hyphenation of Capillary Microextraction with High-Performance Liquid Chromatography." *J. Chromatogr. A* **2008**, 1205 (1-2), 26-35.
115. **A. Malik**, W. Li, D. P. Fries, "Method of Using Sol-Gel Coatings for On-line Preconcentration of Amino Acids in Capillary Electrophoresis," **US Patent No. 7,407,568 B1** (August 5, **2008**).
114. S. S. Segro, **A. Malik**, "Sol-gel methyl coating in capillary microextraction hyphenated on-line with high-performance liquid chromatography. Counterintuitive extraction behavior for polar analytes", *J. Chromatogr. A*, **2008**, 1200 (1), 62-71.
113. L. Fang, S. Kulkarni, K. Alhooshani, **A. Malik**, "Germania-based, Sol-Gel Hybrid Organic-Inorganic Coatings for Capillary Microextraction and Gas Chromatography," *Anal. Chem.* **2007**, 79 (24), 9441-9451.
112. **A. Malik**, D.X. Wang, "Capillary Column and Method of Making," **US Patent Publication** No. 20070172960 (July 26, **2007**).
111. S. Kulkarni, A.M. Shearrow, **A. Malik**, "Sol-gel Immobilized Short Chain Polyethylene Glycol Coating for Capillary Microextraction," *J. Chromatogr. A* **2007**, 1174 (1-2), 50-62.
110. **A. Malik**, K. Alhooshani, "Tube structure with sol-gel zirconia coating" **U.S. Patent Publication** No. US 2007095736 A1 (May 3, **2007**), 18 pp.
109. A. Malik, A. Kabir, C. Shende, "High Efficiency Sol-Gel Gas Chromatography Column," **US Patent Publication** No. 20070062874 A1 (March 22, **2007**).
108. D.-X. Wang, **A. Malik**, "Separation of Enantiomers of a Chiral Lactone on Sol-gel Gas Chromatography Capillary Columns of Poly(methylhydrosiloxane) Stationary Phase with Pendant Permethylated β -Cyclodextrin," *Chin. J. Anal. Chem.* **2007**, 35 (3), 360-364.
107. **A. Malik**, "Sample Preconcentration Tubes with Sol-gel Surface coatings and/or Sol-gel Monolithic Beds," **US Patent Publication** No. 20060113231 A1 (June 1, **2006**).
106. S. Kulkarni, L. Fang, K. Alhooshani, **A. Malik**, "Sol-gel Immobilized Cyano-Polydimethylsiloxane Coating for Capillary Microextraction of Aqueous Trace Analytes Ranging from Polycyclic Aromatic Hydrocarbons to Free Fatty Acids," *J. Chromatogr. A* **2006**, 1024 (1-2) 205-216.

105. **A. Malik**, J.D. Hayes, "Sol-Gel Open Tubular ODS Columns with Charged Inner Surface for Capillary Electrochromatography," **US Patent No. 6,998,040 B2** (issued on February 14, **2006**).
104. **A. Malik**, A. Kabir, "Polytetrahydrofuran-based Coating for Capillary Microextraction," US Patent Publication No. **US2006013981** (January 19, **2006**).
103. **A. Malik**, T.-Y. Kim, "Titania-based Coating for Capillary Microextraction", US Patent Publication No. **US2006013982** ((January 19, **2006**).
102. W. Li, D.P. Fries, **A. Malik**, Negatively Charged Sol-Gel Column with Stable Electroosmotic Flow for Online Preconcentration of Zwitterionic Biomolecules in Capillary Electromigration Separations, *J. Sep. Sci.* **2005**, 28 (16), 2153-2164.
101. **A. Malik**, A. Kabir, G.R. Newkome, K.S. Yoo, "Sol-Gel Dendron Separation and Extraction Capillary Column," **US Patent Publication** No. US0106068 A1 (May 19, **2005**)
100. P. Yang, R.J. Whelan, E.E. Jameson, J.H. Kurzer, C. Carter-Su, A. Kabir, **A. Malik**, R.T. Kennedy, Capillary Electrophoresis and Fluorescence Anisotropy for Quantitative Analysis of Rapid Peptide-Protein Interactions using JAK2 and SH2-B β as a Model System, *Anal. Chem.* **2005**, 77(8), 2482-248990.
99. D.X. Wang and **A. Malik**, "Comparison of Gas Chromatography Separation Characteristics of a Lactone on Sol-Gel Capillary Columns with Different Copolymeric Cyclodextrin-Bonded Polysiloxanes as Stationary Phases," *Chin. J. Anal. Chem.* **2005**, 33 (8), 1095-1099.
98. **A. Malik**, A. Kabir, G.R. Newkome, K.S. Yoo, "Sol-Gel Dendron Separation and Extraction Capillary Column," US Patent Publication No. **US2005106068 A1** (May 19, **2005**).
97. K. Alhooshani, T.-Y. Kim, A. Kabir, **A. Malik**, "Sol-Gel Approach to *in situ* Creation of High pH-Resistant Organic-Inorganic Hybrid Zirconia Coatings for Capillary Microextraction (In-Tube SPME)," *J. Chromatogr. A* **2005**, 1062, 1-14.
96. **A. Malik**, "Sample Preconcentration Tubes with Sol-gel Surface coatings and/or Sol-gel Monolithic Beds," **US Patent No. 6,783,680 B2** (August 31, **2004**).
95. A. Kabir, C. Hamlet, **A. Malik**, "Parts per Quadrillion Level Ultra-trace Analysis of Polar and Nonpolar Compounds *via* Solventless Microextraction on Sol-Gel Polytetrahydrofuran Coated Capillaries and Gas Chromatography-Flame Ionization Detection", *J. Chromatogr. A* **2004**, 1047(1), 1-13.
94. T.-Y. Kim, Alhooshani, K.; Kabir, A.; D.P. Fries, **A. Malik**, "High pH-Resistant, surface-bonded Sol-Gel Titania Hybrid Organic –Inorganic Coating for Effective

- On-line Hyphenation of Capillary Microextraction (In-Tube SPME) with High-Performance Liquid Chromatography” , *J. Chromatogr. A* **2004**, 1047, 165-174.
93. **A. Malik**, D.-X. Wang, Solid-Phase Microextraction Fiber Structure and Method of Making, **US Patent No. 6,759,126 B1** (July 6, **2004**).
 92. W. Li, D.P. Fries, **A. Malik**, “Sol-Gel Stationary Phases for Capillary Electrochromatography,” *J. Chromatogr. A* **2004**, 1044 (1-2), 23-52.
 91. A. Kabir, C. Hamlet, K.S. Yoo, G.R. Newkome, and **A. Malik**, “Capillary Microextraction on Sol-Gel Dendrimer Coatings”, *J. Chromatogr. A* **2004**, 1034(1-2), 1-11.
 90. **A. Malik**, D.X. Wang, “Capillary Column and Method of Making,” **Australian Patent No. AU765881** (January 15, **2004**).
 89. **A. Malik**, “Foreword”, *J. Chromatogr. A* **2004**, 1025 (1), 1.
 88. W. Li, D.P. Fries, A. Alli, **A. Malik**, “Positively Charged Sol-Gel Coatings for On-line Preconcentration of Amino Acids in Capillary Electrophoresis,” *Anal. Chem.* **2004**, 76 (1), 218-227.
 87. **A. Malik**, A. Kabir, C. Shende, “High-efficiency Sol-gel Gas Chromatography Column” US Patent Publication No. **US2004129141** (July 8, **2004**).
 86. C. Shende, A. Kabir, E. Townsend and **A. Malik**, “Sol-gel Polyethylene Glycol Stationary Phase for High-Resolution Capillary Gas Chromatography,” *Anal. Chem.* **2003**, 75 (14) 3518-3530.
 85. **A. Malik**, D.X. Wang, “Capillary Column and Method of Making,” **Australian Patent Publication No. AU765881B** (October 2, **2003**).
 84. **A. Malik**, J.D. Hayes, "Sol-Gel Open Tubular ODS Columns with Charged Inner Surface for Capillary Electrochromatography," **US Patent Publication No. US2003075447** (April 24, **2003**).
 83. D.X. Wang, A. Malik, “Inspection of Thermostability of Sol-gel Capillary Column in Gas Chromatography,” *Chin. J. Anal. Chem.* **2003**, 31 (4), 467-471.
 82. **A. Malik** and J.D. Hayes, “Sol-Gel Monolithic Column with Optical Window and Method of Making,” US Patent Publication No. **US2003213732** (Nov. 20, **2003**).
 81. D. D. Buchanan, E.E. Jameson, J. Perlette, **A. Malik**, R.T. Kennedy, "Effect of buffer, electric field, and separation time on detection of aptamer-ligand complexes for affinity probe capillary electrophoresis" *Electrophoresis* **2003**, 24 (9), 1375-1382.

80. D.X. Wang, **A. Malik**, "Comparison of the capacity of a sol-gel-coated poly(dimethylsiloxane) capillary column and a conventional column, *Chin. J. Chromatogr.* **2002**, 20 (6), 534-536.
79. **A. Malik**, "Sample Preconcentration Tubes with Sol-gel Surface Coatings and/or Monolithic Beds," **US Patent Publication** No. US2002150923 (October 17, **2002**).
78. **A. Malik**, "Advances in Sol-Gel Based Columns for Capillary Electro-Chromatography: Sol-Gel Open Tubular Columns," *Electrophoresis*, **2002**, 23, 3973-3992.
77. **A. Malik**, *Multidimensional Chromatography*, (Edited by L. Mondello, A. C. Lewis, and K.D. Bartle: Wiley, New York, 2002), *J. Am. Chem. Soc.* **2002**, 124, 13959-13960 (JACS Book Review).
76. **A. Malik**, J.D. Hayes, "Sol-Gel Open Tubular ODS Columns with Charged Inner Surface for Capillary Electrochromatography," **International Patent Publication** No. WO 02/059591, **2002**.
75. D.X. Wang, **A. Malik**, "Study of the Sample Capacity of Sol-Gel-Coated Capillary Column in Gas Chromatography," *J. Nanjing Normal U (Nat. Sci. Ed.)*, **2002**, 25 (4), 67-70.
74. **A. Malik**, "New Polymeric Extraction Materials" In *Sampling and Sample Preparation (Comprehensive Analytical Chemistry, Vol. XXXVII)*, ISBN: 9780444505101, edited by J. Pawliszyn, Elsevier, Amsterdam, **2002**, Ch. 32, pp. 1023-1080.
73. **A. Malik**, A. Kabir, G.R. Newkome, K.S. Yoo, "Sol-Gel Dendron Separation and Extraction Capillary Column," **International Patent Publication** No. WO 02/094410 A1 (November 28, **2002**).
72. D.X. Wang, **A. Malik**, "Preparation of Capillary Gas Chromatographic Columns for Separation of Polar Organic Compounds by Sol-Gel Method," *Chin. J. Chromatogr.* **2002**, 20 (3), 279-282.
71. S. Bigham, J. Medlar, A. Kabir, C. Shende, A. Alli, **A. Malik**, "Sol-gel Capillary Microextraction," *Anal. Chem.* **2002**, 74 (4), 752-761.
70. **A. Malik**, A. Kabir, C. Shende, "High-efficiency Sol-gel Gas Chromatography Column" **International Patent Publication** No. WO 02/072225 A1 (September 19, **2002**).

69. **A. Malik**, Sample Preconcentration Tubes with Sol-Gel Surface Coatings and Monolithic Beds, **US Patent Publication** No. US 2002/0150923 A1, October 17, **2002**.
68. **A. Malik**, J.D. Hayes, "Sol-Gel Open Tubular ODS Columns," **International Patent Publication** No. WO 02/059591 A1 (August 1, **2002**).
67. J.D. Hayes, **A. Malik**, "Sol-Gel Open Tubular ODS Columns with Reversed electroosmotic Flow for Capillary Electrochromatography," *Anal. Chem.* **2001**, 73 (5), 987-996.
66. **A. Malik**, J.D. Hayes, **Australian Patent Publication** No AU3810901 (August 20, **2001**)
65. **A. Malik** and J.D. Hayes, "Sol-Gel Monolithic Column with Optical Window and Method of Making," **International Patent Publication** No. WO 01/58562 A1, (August 16, **2001**).
64. G.R. Newkome, K.S. Yoo, A. Kabir, **A. Malik**, "Synthesis of benzyl-terminated dendron for use in high-resolution capillary gas chromatography," *Tetrahedron Lett.* **2001**, 42 (43), 7537-7541.
63. **A. Malik**, D.X. Wang, "Capillary Column and Method of Making," **European Patent No. EP1105723** (June 13, **2001**).
62. **A. Malik**, D.X. Wang, "Solid-phase Microextraction Fiber Structure and Method of Making," **International Patent Publication** No. WO 00/17429 (March 30, **2000**).
61. J.D. Hayes, **A. Malik**, "Sol-gel Monolithic Columns with Reversed electroosmotic Flow for Capillary Electrochromatography," *Anal. Chem.* **2000**, 72 (17), 4090-4099.
60. Y.-D. Hong, S.-W. Namgung, M. Yoshida, **A. Malik**, "Determination of Ultra-micro Amounts of Sulfur in Igneous Rocks by Spectrofluorimetry Using 2-(o-hydroxyphenyl) Benzoxazole Derivatization and Tin(II)-Strong Phosphoric Acid-assisted Reduction," *Talanta*, **2000**, 51, 291-301.
59. **A. Malik**, D.X. Wang, **Australian Patent Publication** No. AU5578799 (March 14, **2000**)
58. **A. Malik**; D.X. Wang "Capillary Column and Method of Making" **International Patent Publication** WO 0011463 (March 2, **2000**)
57. **A. Malik**, D.X. Wang, **Canadian Patent Publication** No. CA2341238 (March 2, **2000**).

56. **A. Malik**, D.X. Wang, Solid Phase Microextraction Fiber Structure and Method of Making," **Australian Patent Publication** No. AU5575599 (April 10, **2000**).
55. **A. Malik**, S.-L.Chong, "Sol-Gel Technology for Thermally Stable Coatings in Solid-phase Microextraction," in *Applications of Solid-Phase Microextraction*, (J. Pawliszyn, ed.; Royal Society of Chemistry, UK, **1999**), Ch. 6, pp. 73-91.
54. C.R. Nelson, W.B. Li, I.M. Lazar, K.H. Larson, **A. Malik**, and M.L. Lee, "Geochemical significance of *n*-alkane compositional-trait variations in coals," *Energy & Fuels* **1998**, *12*(2), 277-283.
53. D.-X. Wang, S.-L. Chong, and **A. Malik**, "Sol-gel Column Technology for Single-step Deactivation, Coating, and Stationary Phase Immobilization in High Resolution Capillary Gas Chromatography" *Anal. Chem.*, **1997**, *69*, 4566-4576.
52. S.L. Chong, D. Wang, J.D. Hayes, B.W. Wilhite, and **A. Malik**, "Sol-gel Coating Technology for the preparation of solid-phase microextraction fibers of enhanced thermal stability," *Anal. Chem.* **1997**, *69* (19), 3889-3898.
51. J.D. Hayes and **A. Malik**, "Sol-gel chemistry-based Ucon coated columns for capillary electrophoresis," *J. Chromatogr. B* **695**, 3-13 (**1997**).
50. W.-B. Li, I.M. Lazar, Y. J. Wan, S.J. Butala, Y. Shen, A. Malik, and **M.L. Lee**, "Determination of Volatile hydrocarbons in Coals and Shales Using Supercritical Fluid Chromatography and Extraction" *Energy and Fuels*, **1997**, *11* (5), 945-950.
49. A. Malik, S. L. Reese, S. Morgan, J. S. Bradshaw, and **M. L. Lee**, "Dicyanobiphenyl Polysiloxane Stationary phases for Gas Chromatography," *Chromatographia* **46**, 79-84 (**1997**).
48. W. Li, A. Malik, and **M.L. Lee**, "Pressure drop effects in packed capillary column supercritical fluid chromatography," *J. Chromatogr. A* **758** (1), 117-123 (**1997**).
47. X. Ren, P.Z. Liu, A. Malik, and **M.L. Lee**, "Hydrophilic polymer-modified polypropylene hollow fibers with controllable electroosmotic flow for capillary electrophoresis," *J. Micro Sep* **8** (8), 535-540 (**1996**).
46. W. Li, D. Pyo, Y. Wan , E. Ibanez, A. Malik, and **M.L. Lee**, "Low aspect ratio packed capillary columns in supercritical fluid chromatography," *J. Microcol. Sep.* **8** (4), 259-268 (**1996**).
45. W. Li, E. Ibanez, A. Malik, and **M.L. Lee**, "Evaluation of a fluorocarbon bonded silica using packed capillary column supercritical fluid chromatography," *J. Microcol. Sep.* **8** (3), 175-181 (**1996**).
44. **A. Malik**, H. Yun, G. Yi., J.S. Bradshaw, B.E. Rossiter, M.L. Lee, and K.E. Markides, "Structural characteristics of pendant and copolymeric cyclodextrin

- polysiloxane stationary phases and their influence on chiral selectivity and resolution in capillary gas chromatography," *J. Microcol. Sep.* **7**, 91-105 (1995).
43. Y. Shen, A. Malik, W. Li, and **M.L. Lee**, "Packed capillary column supercritical fluid chromatography using SE-54 polymer encapsulated silica," *J. Chromatogr. A* **707** (2), 303-310 (1995).
 42. W. Li, A. Malik, **M.L. Lee**, B.A. Jones, N.L. Porter, and B.E. Richter, "Group-type separation of diesel fuels using packed capillary column supercritical fluid chromatography," *Anal. Chem.* **67** (3), 647-654 (1995).
 41. Y. Shen, W. Li, A. Malik, S.L. Reese, B.E. Rossiter, and **M.L. Lee**, "Cyanobiphenyl-substituted polymethylsiloxane encapsulated particles for packed capillary supercritical fluid chromatography," *J. Microcolumn Sep.* **7** (4), 411-419 (1995).
 40. G. Yi, J.S. Bradshaw, B.E. Rossiter, A. Malik, H. Yun, and **M.L. Lee**, "Copolymeric cyclodextrin polysiloxane stationary phases prepared from 6^A,6^C- and 6^A,6^D-dialkenyl- substituted β -cyclodextrin," *J. Heterocyclic Chem.* **32** (2), 621-626 (1995).
 39. B. R. Hillery, J.E. Girard, M.M. Schantz, S.A. Wise, A. Malik, and **M.L. Lee**, "Comparison of selectivities for PCBs in gas chromatography for a series of cyanobiphenyl stationary phases," *J. Microcolumn Sep.* **7** (3), 221-230 (1995).
 38. E. Ibanez, W. Li, A. Malik, and **M.L. Lee**, "Low flow rate modifier addition in packed capillary column supercritical fluid chromatography," *J. High Resolut. Chromatogr.* **18** (9), 559-563 (1995).
 37. J.S. Bradshaw, Z. Chen, G. Yi, B.E. Rossiter, A. Malik, D. Pyo, H. Yun, D.R. Black, S.S. Zimmerman, **M.L. Lee**, W. Tong, and V.T. D'Souza, "6^A,6^B- β -cyclodextrin-hexasiloxane copolymers: Enantiomeric separations by a cyclodextrin-containing rotoxane copolymer," *Anal. Chem.* **67**, 4437-4439 (1995).
 36. G. Yi., W. Li, J.S. Bradshaw, A. Malik, and **M.L. Lee**, "A convenient synthesis of a permethyl-substituted β -cyclodextrin-containing polysiloxane stationary phase using an amide linking group," *J. Heterocycl. Chem.* **32**, 1715-1718 (1995).
 35. **M.L. Lee**, W. Li., and A. Malik, "Supercritical fluid chromatography using low aspect ratio packed columns," *Int. Symp. Chromatogr. 35th Anniversary. Res. Group Liq. Chromatogr. Jpn.*, 821-825 (1995).
 34. P. Petersson, S.L. Reese, G. Yi, H. Yun, A. Malik, J.S. Bradshaw, B.E. Rossiter, **M.L. Lee** and K.E. Markides, "Evaluation of β -cyclodextrin-based chiral stationary phases for capillary column supercritical fluid chromatography," *J. Chromatogr A* **684** (2), 297-309 (1994).

33. W. Li, A. Malik, and **M.L. Lee**, "Fused silica packed capillary columns in supercritical fluid chromatography," *J. Microcol. Sep.* **6** (6), 557-563 (1994).
32. P.Z. Liu, A. Malik, and **M.L. Lee**, "Polyacrylamide-modified polypropylene hollow fibers for capillary electrophoresis," *J. Microcol. Sep.* **6** (6), 581-589 (1994).
31. G. Yi, J.S. Bradshaw, B.E. Rossiter, A. Malik, W. Li, H. Yun, and **M.L. Lee**, "Large-rim-tethered permethyl-substituted β -cyclodextrin polysiloxanes for use as chiral stationary phases in open tubular column chromatography", *J. Chromatogr. A*, **673** (2), 219-230 (1994).
30. Z. Zhao, A. Malik, **M.L. Lee**, and G.D. Watt, "A Capillary electrophoresis method for studying *apo*, *holo*, recombinant, and subunit-dissociated ferritins", *Anal. Biochem.* **218** (1), 47-54 (1994).
29. X. Shao, K. O'Neill, Z. Zhao, S. Anderson, A. Malik, and **M.L. Lee**, "Analysis of nucleotide pools in human lymphoma cells by capillary electrophoresis," *J. Chromatogr. A* **680** (2), 463-468 (1994).
28. K. O'Neill, X. Shao, Z. Zhao, A. Malik, and **M.L. Lee**, "Capillary electrophoresis of nucleotides on Ucon-coated fused silica columns", *Anal. Biochem.* **222** (1), 185-189 (1994).
27. A. Malik, Z. Zhao, and **M.L. Lee**, "Simple method for the preparation of highly efficient polymer-coated capillary electrophoresis columns," *J. Microcol. Sep.* **5**, 119-125 (1993).
26. B.E. Rossiter, J.S. Bradshaw, S.L. Reese, A. Malik, and **M.L. Lee**, "Polysiloxanes containing pendant cyano-substituted biphenyls as stationary phases for chromatographic columns," **US Patent No. US5262052** (Nov. 16, 1993).
25. Z. Zhao, A. Malik, and **M.L. Lee**, "Study of Adsorption on Polymer-coated Fused Silica Capillary Electrophoresis Columns Using Selected Peptide and Protein Standards," *Anal. Chem.* **65** (16), 2747-2752 (1993).
24. G.-L. Yi, J.S. Bradshaw, B.E. Rossiter, A. Malik, W. Li, and **M.L. Lee**, "New Permethyl-Substituted β -Cyclodextrin Polysiloxanes for Use as Chiral Stationary Phases in Open Tubular Column Chromatography," *J. Org. Chem.* **58**, 4844-4850 (1993).
23. P.Z. Liu, A. Malik, M.C.J. Kuchar, W.P. Vorkink, and **M.L. Lee**, "Polymeric Hollow Fibers for Capillary Electrophoresis," *J. Microcol. Sep.* **5** (3), 245-253 (1993).
22. A. Malik, W. Li, and **M.L. Lee**, "Preparation of long packed capillary columns using carbon dioxide slurries," *J. Microcol. Sep.* **5**, 361-369 (1993).

21. S.H. Page, A. Malik, S.R. Sumpter, and **M.L. Lee**, "Demonstration of a linear composition gradient during water saturation of CO₂ in supercritical fluid chromatography," *Chromatographia* **37** (1-2), 93-97 (1993).
20. A. Malik, I. Ostrovsky, S.R. Sumpter S.L. Reese, S. Morgan, B.E. Rossiter, J.S. Bradshaw, and **M.L. Lee**, "Novel cyanobiphenylpolysiloxane stationary phases for gas and supercritical fluid chromatography," *J. Microcol. Sep.* **4** (6), 529-540, (1992).
19. **B.E. Rossiter**, S.L. Reese, S. Morgan, A. Malik, J.S. Bradshaw, and M.L. Lee, "Synthesis of an isomeric series of cyanobiphenyl substituted-polysiloxanes for stationary phases in gas chromatography," *J. Microcol. Sep.* **4** (6), 521-527, (1992).
18. Z. Zhao, A. Malik, and **M.L. Lee**, "Separation of proteins and proteolytic digests of proteins by capillary electrophoresis on Superox-coated open tubular columns," *J. Microcol. Sep.* **4** (5), 411-417 (1992).
17. A. Malik, **K. Jinno**, "Retention behavior of aromatic compounds in liquid and supercritical fluid chromatography with coarse particles of bonded-cyclodextrin stationary phase," *Chromatographia* **31**(11-12), 561-568 (1991).
16. A. Malik, **K. Jinno**, "Microcolumn liquid chromatography of polycyclic aromatic hydrocarbons and some isomeric compounds on cyclodextrin stationary phases," *J. High Resolut. Chromatogr.* **14**, 117-122 (1991).
15. A. Malik, **K. Jinno**, "New approach to determining dead-time of microcolumns packed with cyclodextrin in supercritical fluid chromatography," *Chromatographia* **31**, 448-452 (1991).
14. A. Malik, **K. Jinno**, "Determination of void/dead volume of liquid chromatographic column containing β -cyclodextrin as the stationary phase. Part I. Existing methods for the determination of LC dead volume - a survey of literature," *Chromatographia* **30** (3-4), 135-137 (1990).
13. A. Malik, **K. Jinno**, "Determination of void/dead volume of liquid chromatographic columns containing β -cyclodextrin as the stationary phase. Part II. A new graphical method," *Chromatographia* **30**, 138-143 (1990).
12. **V.G. Berezkin**, V.S. Gavrichev, A. Malik, "High efficiency fused silica capillary micro-packed columns in gas chromatography," *J. Liq. Chromatogr.* **10** (8-9), 1707-1726 (1987).

11. A. Malik, **V.G. Berezkin**, V.S. Gavrichev, "Investigation of capillary micro-packed columns composed of two segments packed with a sorbent of different particle size," *Chromatographia* **22** (1-6), 117-122 (1986).
10. A. Malik, A.R. Jumaev, **V.G. Berezkin**, "Sample capacity of open tubular and fused silica capillary micro-packed columns," *J. High Resolut. Chromatogr./Chromatogr. Commun.* **9** (5), 312-313 (1986).
09. V.S. Gavrichev, **V.G. Berezkin**, A.R. Jumaev, A. Malik, Yu.M. Borisov, I.A. Lvov, Yu.M. Lyubiyov, V.I. Mikhailov, V.D. Sokovikh, "Application of fused silica capillary micro-packed columns in gas chromatography-mass spectrometry," *J. Chromatogr.* **365**, 237-242 (1986).
08. **V.G. Berezkin**, A. Malik, V.S. Gavrichev, "Investigation of gas chromatographic characteristics of fused silica capillary micro-packed columns with pellicular sorbent" In *Chromatography '85*, H. Kalasz and L.S. Ettre Eds. (Akademiai Kiado, Budapest, Hungary, 1986), pp. 429-436.
07. A. Malik, V.S. Gavrichev, **V.G. Berezkin**, N.V. Voloshina, "Application of fused silica capillary micro-packed columns in gas chromatography," In *Chromatography '85*, H. Kalasz and L.S. Ettre Eds. (Akademiai Kiado, Budapest, Hungary, 1986) pp. 437-452.
06. A. Malik, **V.G. Berezkin**, V.S. Gavrichev, "Fused silica capillary micro-packed columns in Gas Chromatography," *Chromatographia* **19** (1), 327-334 (1984).
05. **A. Malik**, V.G. Berezkin, V.S. Gavrichev, E.P. Skornyakov, "Khromatograficheskaya kolonka i sposob iyo izgotovleniya (Chromatographic column and a method for its preparation)," **USSR Inventors Certificate (Patent)** No. S.U. 1117527 (Cl.G01N31/08), Otkryt. Izobret. (Discoveries and Inventions), 1984, Bulletin No. 37, p.114 (in Russian).
04. **A. Malik**, V.S. Gavrichev, V.G. Berezkin, V.N. Khokhlov, E.P. Skornyakov, "Sposob Izgotovleniya kapillyarnoi nasadochnoi kolonki (A method for the preparation of capillary packed column)," **USSR Inventors Certificate** No. S.U. 110625 (Cl. 01N31/08), USSR Invention Bulletin 1984, No. 28 (in Russian).
03. **V.G. Berezkin**, A. Malik, V.S. Gavrichev, "*Issledovanie Kvartsevykh kapillyarnykh mikronasadochnykh kolonok* (Investigation of fused silica capillary micropacked columns)," *Zh. Analit. Khim.* **39**, 522-525 (1984).
02. **V.G. Berezkin**, A. Malik, V.S. Gavrichev, "Fused silica capillary micro-packed columns for gas chromatography," *J. High Resolut. Chromatogr./Chromatogr. Commun.* **6**, 388- 389 (1983).

01. **T.P. Popova, V.E. Shiryayeva, A. Malik**, "Gazovaya khromatografiya na modifitsirovannykh steklyannykh kolonkakh (Gas chromatography on modified glass capillary columns)," In *Vysoko-effektivnaya Gazovaya High Resolution Chromatography*, T.N. Tyurina Ed. (Nauka Publishers, USSR Academy of Sciences, Moscow, **1982**), pp. 37-58 (in Russian).

Presentations: (Lead Author: **Bolded**; Presenting Author: Underlined)

176. **A. Malik**, C. Jiang, S. Kesani, E. Seyyal, M.-P. Tran, A. Alhendal, New Generation of Exceptionally Stable Surface-bonded Sol-gel Sorbent Media for Capillary Microextraction Providing an Effective Capillary Format for Direct Online Hyphenation of Miniaturized Sample Preparation to Liquid-phase Separations, **Invited Keynote Lecture**, 20th **International Symposium** on Advances in Microextraction Technologies (**ExTech 2018**), Ames, IA, USA, June 19-22, **2018**.
175. **A. Malik**, Transition Metal Oxide-based Sol-gel stationary Phases and Extraction Media for Analytical Separation and Sample Preparations in the Capillary Format, **Invited Lecture**, 42nd **International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 13–18, **2018**.
174. **A. Malik**, S. Kesani, M. Tran, A. Alhendal, M. Kumar, Sol-gel Capillary Microextraction with Niobia-, Tantara-, and Zirconia-based Sorbents Providing Selective Enrichment of Phosphopeptides and Neurotransmitters for Online HPLC Analysis, **Oral Presentation**, Eastern Analytical Symposium (**EAS 2017**), Princeton, NJ, USA, November 13-15, **2017**.
173. S. Kesani, A. Alhendal, M. Tran, M. Kumar, **A. Malik**, Sol-Gel Niobia-, Tantara-, and Zirconia-based Extraction Media for On-line Enrichment of Phosphopeptides and Catecholamine Neurotransmitters by Capillary Microextraction Coupled to HPLC Analysis, **Invited Keynote Lecture**, 19th **International Symposium** on Advances in Microextraction Technologies (**ExTech 2017**), Santiago de Compostela, June 27-30, **2017**.
172. **A. Malik**, A. Alhendal, E. Seyyal, S. Kesani, M.-P. Tran, L. Meng, Sol-Gel Organic-Inorganic Hybrid Materials in Separation Science, **Invited Lecture** at the 55th Eastern Analytical Symposium (EAS) Award Session Honoring Luis A. Colon for Outstanding Achievements in Separation Sciences, Somerset, NJ, **USA**, November 14-16, **2016**.
171. **A. Malik**, A. Alhendal, M.-P. Tran, S. Kesani, E. Seyyal, L. Meng, New Directions in the Design and Synthesis of Sol-Gel Media for the Extraction and/or Preconcentration of Biologically and Environmentally Important Molecules, **Keynote Lecture**, 18th International Symposium on Advances in Extraction

- Technologies (ExTech 2016) and 22nd International Symposium on Separation Science (ISSS 2016), Torun, **Poland**, July 3-6, **2016**.
170. **A. Malik**, A. Alhendal, Y. Larose, Sheshanka Kesani, E. Seyyal, Advanced Sol-Gel Materials for the Isolation, Preconcentration, and Chromatographic Analysis of Biologically Important Molecules, **Keynote Lecture**, XVI Latin American Congress on Chromatography (COLACRO 2016) and 9th Portuguese National Meeting on Chromatography, Lisbon, Portugal, Jan 5-9, **2016**.
169. **A. Malik**, A. Alhendal, E. Seyyal, MinhPhuong Tran, S. Kesani, "Sol-Gel Capillary Microextraction Coupled to HPLC for the Preconcentration and Analysis of Biologically Important Molecules," **Oral Presentation**, 54th Annual **Eastern Analytical Symposium** and Exposition, Somerset, New Jersey, November 16-18, **2015**.
168. **A. Malik**, S. Kesani, M. Tran, A. Alhendal, E. Seyyal, C. Jiang, M. McLean, Y. Larose, L. Meng, J. Henderson "A Journey Through the Developments of Sol-Gel Materials in Separation Science," **Invited Lecture** to be presented at the **15th South American Chromatography Congress** (COLACRO 2014), Cartagena, Colombia, September 29 – October 3, **2014**.
167. **A. Malik**, E. Seyyal, S. Kesani, C. Jiang, M. Tran, A. Alhendal "Sol-gel Technology for the Creation of Advanced Sorbent Materials for Analytical Microextraction", **Invited Lecture** to be presented at the **16th International Symposium** on the Advancement of Extraction Technologies (ExTech 2014), Chania (Crete), **Greece**, May 25-28, **2014**.
166. C. Jiang, M. McLean, A. Alhendal, E. Seyyal, **A. Malik**, "New Developments in Sol-gel Sorbent Technology for Microextraction for online Coupling with Liquid-phase Separation Techniques", **Invited lecture** to be presented at **38th International Symposium** on Capillary Chromatography (Rive del Garda, **Italy**, May 18-23, **2014**).
165. **A. Malik**, C.L. Jiang, S. Kesani, A. Alhendal, M.-P. Tran, E. Seyyal, M. McLean, Y. Larose, L. Meng, "Sol-gel Approach to the Design and Creation of Advanced Extraction Media – A Molecular Perspective, Invited **Keynote Lecture**, **15th International Symposium** on Advances in Extraction Technologies (ExTech 2013), Joao Pessoa, **Brazil**, August 4-7, **2013**.
164. **A. Malik**, *Sol-gel Materials in Analytical Microextraction*, Invited **Short course lecture** presented at 15th International Symposium on Advances in Extraction Technologies (ExTech 2013), Joao Pessoa, **Brazil**, August 4-7, **2013**.
163. **A. Malik**, C. Jiang, A. Alhendal, M-P Tran, E. Seyyal, "Germania-based Sol-gel Materials in Separation Science," **Invited Lecture**, **37th International**

Symposium on Capillary Chromatography, Palm Springs, CA, **USA**, May 12-16, **2013**.

162. **A. Malik**, C. Jiang, M. McLean, A. Alhendal, M. Tran, S. Kesani, E. Seyyal, Y. Larose, "Germanium- and Tungsten oxide-based Sol-gel Organic-inorganic Hybrid Materials in Gas and Liquid-phase Separations," **Invited Plenary Lecture**, 36th **International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 27 – June 1, **2012**.
161. C. Jiang, M. Mclean, E. Turner, A. Alhendal, M. Tran, S. Kesani, Y. Larose, E. Seyyal, and , **A. Malik**, "Sol-Gel Materials for High-Resolution Microseparation and Solvent-free Sample Preconcentration," **Invited Lecture**, 243rd **ACS National Meeting**, San Diego, CA, **USA**, March 25-29, **2012**.
160. **A. Malik**, E. Turner, M. Mclean, S. Kesani, M. Tran, Y. Larose, A. Alhendal, E. Seyyal, and C. Jiang, "Sol-gel Capillary Microextraction - An Effective Means for On-line Hyphenation of Sample Preparation with Liquid-Phase Separation" **Invited Keynote Lecture**, 12th **International Symposium** on Hyphenated Techniques in Chromatography and Hyphenated Analyzers (HTC-12), Bruges, **Belgium**, February 1-3, **2012**.
159. E.B. Turner, M-P. Tran, S. Kesani, A. Alhendal, C-L. Jiang, S.S. Segro, and **Abdul Malik**, "A Journey Through Column Technology in Separation Science", **Invited Lecture** at the Department of Chemistry, Bangladesh University of Engineering and Technology (BUET), Dhaka, **Bangladesh**, December 26, **2011**.
158. W. Li, J.D. Hayes, D.P. Fries, **A. Malik**, "Sol-Gel Coatings and Monolithic Beds in Capillary Electrophoresis," **Invited Lecture**, 17th Latin-American Symposium on Biotechnology, Biomedical, Biopharmaceutical and Industrial Applications of Capillary Electrophoresis and Microchip Technology (LACE 2011), Hollywood, Florida, December 2-6, **2011**.
157. A. Alhendal, E.B. Turner, M.P. Tran, S. Kesani, E. Seyyal, M. McLean, Y. Larose, C.-L. Jiang, **A. Malik**, "Germania-based Sol-gel Sorbents in Capillary Microextraction", **Invited Lecture**, 13th **International Symposium** on Advances in Extraction Technologies, Kuala Lumpur, **Malaysia**, September 27-29, **2011**.
156. **A. Malik**, E.B. Turner, C. Jiang, A. Alhendal, M. Tran, S. Kesani, E. Seyyal, M. McLean, Y. Larose, "Germania-based Sol-gel Materials in Separation Science" (Paper #435), **Invited Lecture**, 43rd **IUPAC World Chemistry Congress**, San Juan Puerto Rico, July 30 – August 7, **2011**.
155. **A. Malik**, E.B. Turner, C. Jiang, M.-P. Tran, S. Kesani, E. Seyyal, A. Alhendal, M. McLean, and Y. Larose, "Sol-gel Germania-based GC Stationary Phase and Monolithic Microextraction Media in Separation Science," **Lecture** at the 35th

International Symposium on Capillary Chromatography (ISCC), San Diego, CA, USA, May 1-5, **2011**.

154. E.B. Turner, M.-P. Tran, S. Kesani, A. Alhendal, C. Jiang, S.S. Segro, **A. Malik**, "Sol-Gel Materials in Separation Science," **Invited Seminar** at the Department of Chemistry and Biochemistry, Seton Hall University, West Orange, NJ, **USA**, March 1, **2011**.
153. C. Jiang, E.B. Turner, S.S. Segro, M.-P. Tran, S. Kesani, A. Alhendal, E. Seyyal, **A. Malik**, "Germania-based Sol-Gel Sorbents and Stationary Phases in Chromatographic Analysis" **Invited Lecture** at the 2010 China-Japan-Korea Symposium on Analytical Chemistry (CJK2010), Wuhan, **China**, October 31 – November 2, **2010**.
152. E.B. Turner, S.S. Segro, M.-P. Tran, S. Kesani, A. Alhendal, C. Jiang, **A. Malik**, "Germania-based Sol-gel Materials for Capillary Microextraction" **Invited Plenary Lecture** at the 12th **International Symposium** on the Advancement in Extraction Techniques (ExTech 2010), Poznan, **Poland**, September 20-22, **2010**.
151. **A. Malik**, "Sol-gel Organic-inorganic Hybrid Materials in Analytical Microextraction" – an **invited tutorial** presented at the 12th **International Symposium** on the Advancement in Extraction Techniques (ExTech 2010), Poznan, **Poland**, September 20-22, **2010**.
150. S.S. Segro, E.B. Turner, M.-P. Tran, S. Kesani, A. Alhendal, C. Jiang, **A. Malik**, "Germania-based Sol-gel Sorbents and Stationary Phases in Separation Science" **Invited Plenary Lecture** at the IV Brazilian Symposium on Chromatography (SIMCRO 2010), Campos do Jordao (SP), **Barzil**, Sep 13-15, **2010**.
149. **A. Malik**, S.S. Segro, E.B. Turner, C. Jiang, M. Tran, S. Kesani, A. Alhendal, "Germania-based Sol-gel Coatings and Monolithic Beds in Separation Science," **Invited Plenary Lecture**, 34th **International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 30 – June 4, **2010**.
148. **A. Malik**, S.S. Segro, E.B. Turner, C. Jiang, M. Tran, S. Kesani, A. Alhendal, Non-Silica Based Sol-gel Stationary Phases and Extraction Media in Separation Science, **Invited Lecture** at the Department of Chemistry, **University of Waterloo**, Waterloo, Canada, May 4, **2010**.
147. **A. Malik**, S.S. Segro, E.B. Turner, M. Tran, C. Jiang, A. Alhendal, "Titania- and Germania-based Hybrid Organic-Inorganic Sol-Gel Coatings and Monolithic Beds for Ultrahigh Stability in Separation Science," **Invited Lecture**, **Pittcon 2010**, Orlando, Florida, **USA**, February 28 – March 5, **2010**.

146. **A. Malik**, S.S. Segro, E.B. Turner, M. Tran, A. Alhendal, C.-L. Jiang, "Sol-Gel Germania Coatings and Monolithic Beds for Capillary Microextraction," **Invited Plenary Lecture**, 11th International Symposium on the Development in Extraction Technology (ExTech 2009), Rapid City, SD, USA, October 4-7, **2009**.
145. S.S. Segro, E. B. Turner, L. Fang, A. M. Shearrow, Y. Cabezas, **A. Malik**, Sol-Gel Approach to Column Technology for Analytical Microseparation and Sample Preconcentration, Presentation at University of Alberta Chemistry Department, September 30, **2009**.
144. **A. Malik**, S. S. Segro, L. Fang, Y. Cabezas, E. Turner, Judy Triplett, "Sol-Gel Germania and Titania-based Ultra-High Stability Sorbents for Capillary Microextraction On-line Coupled to HPLC," **Invited Keynote Lecture**, 33rd **International Symposium** on Capillary Chromatography and Electrophoresis, Portland, OR, **USA**, May 19-21, **2009**.
143. **A. Malik**, Segro, S.S.; Fang, L.; Turner, E.; Shearrow, A.M.; Triplett, J. "Sol-gel titania, zirconia, and germania-based hybrid organic-inorganic coatings and monolithic beds for ultra-high stability in separation and sample preparation under aggressive environments," **Invited Lecture** at the 237th **ACS National Meeting and Exposition**, Salt Lake City, Utah, **USA**, March 21-26, **2009**.
142. **A. Malik**, S. S. Segro, A. M. Shearrow, L. Fang, E. Turner, "Sol-Gel Technology in Analytical Microseparation," **Invited Lecture** at the 2008 **Eastern Analytical Symposium**, Somerset, New Jersey, **USA**, November 17-20, **2008**.
141. S. S. Segro, L. Fang, A.M. Shearrow, E. Turner, **A. Malik**, "Sol-gel Materials in Analytical Separations and Sample Preparations," Invited seminar presented at the Department of Chemistry and Biochemistry, **Florida International University**, Miami, Florida, USA, October 31, **2008**.
140. L. Fang, A. M. Shearrow, S.S. Segro, E. Turner, **A. Malik**, "Sol-gel Germania Materials in Analytical Separation and Sample Preconcentration," **Invited Plenary Lecture**, 32nd **International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 26-30, **2008**.
139. **A. Malik**, A. M. Shearrow, S. Kulkarni, L. Fang, E. Turner, and S. Segro, "Immobilization of Short Chain Polyethylene Glycols via Ionic Liquid Mediated Sol- Gel Process for Solvent-free Preconcentration of Polar Analytes by Capillary Microextraction, **Invited lecture**, 59th Pittsburgh Conference (**Pittcon 2008**), New Orleans, LA, **USA**, March 1-7, **2008**.
138. **A. Malik**, Sol-Gel Materials in Analytical Microextraction, Half-day short course presented at **10th International Symposium** on Advances in Extraction Technologies (ExTech 2008), Bruges, **Belgium**, January 28-30, **2008**.

137. **A. Malik**, A. Shearrow, S. Kulkarni, L. Fang, E. Turner, and S. Segro, "Sol-Gel Immobilized Polyglycol Sorbents for Capillary Microextraction of Polar Trace Analytes from Aqueous Samples," **Invited Lecture, 10th International Symposium** on Advances in Extraction Technologies (ExTech 2008), Bruges, **Belgium**, January 28-30, **2008**.
136. A. Shearrow, S. Segro, L. Fang, E. Turner, **A. Malik**, "Sol-Gel Immobilization of Polar Stationary Phases" **Invited Lecture, 31st International Symposium** on Capillary Chromatography and Electrophoresis, Albuquerque, NM, **USA**, November 28-30, **2007**.
135. L. Fang, A. Shearrow, S. Kulkarni, E. Turner, Scott Segro, and **A. Malik**, "Germania-Based Sol-Gel Organic-Inorganic Hybrid Coatings For Capillary Microextraction" **Invited Key Note Lecture, 9th International Symposium** on Advances in Extraction Technologies (ExTech 2007), Alesund, **Norway**, June 3-6, **2007**.
134. **A. Malik**, "Novel Microextraction Media for Solvent-free Sample Preparation in Analytical Microextraction," **Tutorial** given at the **9th International Symposium** on Advances in Extraction Technologies (ExTech 2007), Alesund, **Norway**, June 3-6, **2007**.
133. **A. Malik**, L. Fang, A. Shearrow, S. Kulkarni, E. Turner, and S. Segro, "Sol-Gel Hybrid Materials for Environmental and Biomedical Trace Analysis," **Invited Lecture** at 2007 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2007**), Orlando, Florida, **USA**, May 10-12, **2007**.
132. **A. Malik**, "Sol-Gel Column Technology and Its Prospects in Biomedical Research," **Invited Lecture** at CMD⁵, University of South Florida, Tampa, Florida, **USA**, March 10, **2007**.
131. S. Kulkarni, T.-Y. Kim, L. Fang, A. Shearrow, E. Turner, S. Segro, **A. Malik**, "Sol-Gel Approach to Column Technology in Analytical Microseparations," **Invited lecture** at the Department of Analytical and Physical Chemistry, **Uppsala University**, Uppsala, **Sweden**, October 5, **2006**.
130. T.-Y. Kim, S. Kulkarni, L. Fang, A. Shearrow, E. Turner, S. Segro, **A. Malik**, "Sol-Gel Organic-Inorganic Hybrid Stationary Phases and Microextraction Media Based on Silica, Titania, Zirconia and Beyond," **Invited Plenary Lecture, 29th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 29-June 2, **2006**.
129. **A. Malik**, T.-Y. Kim, S. Kulkarni, A. Shearrow, L. Fang, E. Turner, and S. Segro, "Sol-Gel Stationary Phases and Extraction Media for Solvent-Free Sample Enrichment and Trace Analysis," **Invited Lecture** at 2006 Florida Annual

- Meeting and Exposition of the American Chemical Society (**FAME 2006**), Orlando, Florida, **USA**, May 11-13, **2006**.
128. S. Kulkarni, L. Fang, T.-Y. Kim, A. Shearrow, E. Turner, S. Segro, **A. Malik**, "Sol-Gel Stationary Phases and Extraction Media in Analytical Microseparation and Solvent-free Sample Preconcentration," **Invited Lecture** at the Graduate Seminar of **University of Denver** Department of Chemistry and Biochemistry, Denver, CO, **USA**, May 4, **2006**.
 127. T.-Y. Kim, S. Kulkarni, L. Fang, A. Shearrow, E. Turner, S. Segro, **A. Malik**, "Sol-Gel Hybrid Materials as Stationary Phases and Sample Preconcentration Media in Chromatographic/Electrophoretic Microseparations," **Invited lecture** at **Bristol-Myers Squibb** Pharmaceutical Research Institute, New Brunswick, NJ, **USA**, April 14, **2006**.
 126. S. Kulkarni, T.-Y. Kim, A. Kabir, L. Fang, A.M. Shearrow, E. Turner, G.R. Newkome, **A. Malik** "Polar Sol-gel Hybrid Organic-Inorganic Sorbents with Linear and Dendritic Cyano Ligands for Capillary Microextraction of Underivatized Highly Polar Analytes from Aqueous Samples," **Invited plenary lecture** at the 8th **International Symposium** on Advances in Extraction Technologies, York, **UK**, February 6-8, **2006**.
 125. **A. Malik**, W. Li, T.-Y. Kim, S. Kulkarni, A.M. Shearrow, L. Fang, E. Turner, " Sol-Gel Approach to Stationary Phase Design and Synthesis for Analytical Microseparations," **Invited lecture** at the 1st Symposium on Analytical Chemistry and Biology: From Molecule to Proteome," Montpellier, **France**, September 26-29, **2005**.
 124. **A. Malik**, A. Kabir, S. Kulkarni, L. Fang, A. Shearrow, K. Alhooshani, T.Y. Kim, "Sol-Gel Polar Stationary Phases for Capillary-based Separation and Solvent-free Extraction Methods," **Invited lecture** at the 28th **International Symposium** on Capillary Chromatography and Electrophoresis, Las Vegas, **USA**, May 22-25, **2005**.
 123. **A. Malik**, A. Kabir, T.-Y. Kim, W. Li, K. Alhooshani, S. Kulkarni, L. Fang, A. Shearrow, "Sol-gel Coatings and Monolithic Beds in Analytical Microseparation and Sample Preconcentration," **Invited lecture** at the graduate seminar, department of Chemistry and Biochemistry, **Southern Illinois University**, Carbondale, IL, **USA**, April 22, **2005**.
 122. **A. Malik**, "Sol-gel Coatings and Monolithic Beds for Solvent-free Sample Preconcentration and Separation in Environmental Trace Analysis," **Invited Lecture** at the graduate seminar of the USF department of chemical engineering, Tampa, Florida, **USA** , October 29, **2004**.

121. **A. Malik**, "Sol-Gel Approach to Column Technology for Analytical Separations and Solventless Sample Preconcentrations," **Invited Lecture** at Restek Corporation, PA, **USA**, October 1, **2004**.
120. **A. Malik**, K. Alhooshani, T.-Y. Kim, A. Kabir, W. Li, S. Kulkarni, L. Fang, "Sol-gel Titania- and Zirconia-Based Organic-Inorganic Hybrid Materials for Solventless Microextraction of Trace Analytes," Sixth **International Symposium** on Advances in Extraction Technologies (ExTech 2004), Leipzig, **Germany**, September 6-8, **2004**.
119. W. Li, T.-Y. Kim, K. Alhooshani, A. Kabir, S. Kulkarni, D.P. Fries, **A. Malik**, "Novel Sol-gel Strategies for On-line Preconcentration of Biomolecules and Environmental Pollutants in Liquid-Phase Trace Analysis," **Plenary Lecture**, 27th **International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 31-June 4, **2004**.
118. **A. Malik**, W. Li, K. Alhooshani, T.-Y. Kim, S. Kulkarni, and A. Acevedo, Sol-Gel Stationary Phases In Analytical Microseparations: Current Status And Future Trends," **Invited Lecture** at 2004 Florida Annual Meeting and Exposition of the American Chemical Society (FAME 2004), Orlando, Florida, **USA**, May 6-8, **2004**.
117. **A. Malik**, T.-Y. Kim, K. Alhooshani, S. Kulkarni, A. Kabir, W. Li, J. Medlar, Transition Metal Oxide-Based Organic-Inorganic Hybrid Sol-Gel Stationary Phases" **Invited Lecture** at the **26th International Symposium** on Capillary Chromatography and Electrophoresis, Las Vegas, **USA**, May 18-22, **2003**.
116. **A. Malik**, A. Kabir, W. Li, K. Alhooshani, T.-Y. Kim, and J. Medlar, "New Direction in Stationary Phase Technology for Analytical Microseparations – The Sol-Gel Approach" **Invited Lecture** at 2003 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2003**), Orlando, Florida, **USA**, May 8-10, **2003**. Abstract # 86, p. 45.
115. W. Li, T.-Y. Kim, K. Alhooshani, A. Kabir, C. Shende, **A. Malik**, "Sol-Gel Materials for the Preconcentration and Separation of Biomolecules" **Invited Lecture** at the **Pittsburgh Conference**, Orlando, Florida, **USA**, March 9-14, **2003**.
114. **A. Malik**, W. Li, A. Kabir, C. Hamlet, K. Alhooshani, J. Medlar, T.-Y. Kim, S. Kulkarni, "Sol-Gel Stationary Phases in Analytical Microextraction" **Invited Lecture**, Fifth **International Symposium** on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, **USA**, March 5-7, **2003**.

113. W. Li, K. Alhooshani, T.-Y. Kim, C. Shende, A. Kabir, **A. Malik**, "Sol-Gel Chemistry in Separation Science," **Invited Lecture** at the 2002 Eastern Analytical Symposium, Somerset, New Jersey, **USA**, November 18-21, **2002**.
112. W. Li, K. Alhooshani, T.-Y. Kim, C. Shende, A. Kabir, **A. Malik**, Sol-Gel Coatings and Monolithic Beds for Analytical Microseparations and Sample Preconcentrations, **Invited Lecture** at the Analytical Division Seminar of the Department of Chemistry, **Florida State University**, Tallahassee, Florida, **USA**, October 31, **2002**.
111. **A. Malik**, "Solid-phase Microextraction – A Solventless Approach to Analytical Sample Preparation", **Invited Lecture** at the Annual Chemistry Discipline Meeting of Florida Department of Law Enforcement, Tampa, Florida, **USA**, July 17, **2002**.
110. **A. Malik**, S. Bigham, A. Kabir, C. Hamlet, C. Shende, C. Tolar, K. Alhooshani, "Sol-Gel Materials for Analytical Microextraction" **Invited Lecture**, ExTech 2002 (Advances in Extraction Technologies), Paris, **France** (July 3-5, **2002**).
109. A. Kabir, C. Hamlet, S. Bigham, T.-Y. Kim, J. Medlar, C. Tolar, **A. Malik** "Sol-Gel Capillary Microextraction with Organic-Inorganic Hybrid Surface Coatings and Monolithic Beds" **Plenary Lecture**, 25th International Symposium on Capillary Chromatography, Riva del Garda, **Italy** (May 13-17, **2002**).
108. S. Bigham, A. Kabir, C. Shende, T.-Y. Kim, W. Li, J. Medlar, C. Tolar, A. Alli, C. Hamlet, **A. Malik**, "Sol-Gel Coatings and Monolithic Beds in Chromatographic Separations and Solventless Capillary Microextractions" **Plenary Lecture (PL 3)**, 9th Latin American Congress on Chromatography, Cartagena, **Colombia** (February 20-22, **2002**). Proceedings, pp. 9-10.
107. D.X. Wang, J.D. Hayes, S. Bigham, A. Kabir, C. Shende, T.-Y. Kim, W. Li, J. Medlar, C. Tolar, A. Alli, C. Hamlet, **A. Malik**, "Sol-Gel Approach to Column Technology for Analytical Microseparations" **Invited presentation** at World Precision Instrument, Sarasota, Florida, **USA** (January 23, **2002**).
106. **A. Malik**, S. Bigham, J. Medlar, C. Ashford, C. Tolar, A. Kabir, "Capillary Microextraction with Sol-Gel Coatings and Monolithic Beds," **Invited Lecture** at **ExTech 2001**, Advances in Extraction Technologies Barcelona, **Spain**, September 17-19, **2001**.
105. **A. Malik**, A. Kabir, C. Shende, W. Li, T.-Y. Kim, S. Bigham, J. Medlar, C. Ashford, C. Tolar, "sol-Gel Coatings and Monolithic Beds Gas- and Liquid Phase Separation and Sample Preconcentration," **Invited Lecture** at the 24th **International Symposium** on Capillary Chromatography and Electrophoresis, Las Vegas, **USA**, May 20-24, **2001**.

104. **A. Malik**, J.D. Hayes, "Sol-Gel Monolithic Columns with *in situ* Created Wall-bonded Organic-Inorganic Hybrid Separation Beds for Capillary Electrochromatography," **Plenary Lecture**, 23rd **International Symposium** on Capillary Chromatography, Riva del Garda, **Italy** (June 5-10, **2000**).
103. **A. Malik**, J.D. Hayes, D.-X. Wang, A. Kabir, S. Bigham, C. Ashford, "New Developments in Sol-gel Column Technology for Analytical Microseparations," Graduiertenkolleg, **Invited Lecture** for "Chemistry in Interface" Lecture Series, University of Tubingen, **Germany**, June 13, **2000**.
102. **A. Malik**, J.D. Hayes, D.-X. Wang, A. Kabir, "Surface-bonded Organic-inorganic Sol-gel Coatings and Monolithic Separation Beds: Their *in situ* Creation, Performance, and Analytical Potential in Microseparations," **Invited Lecture**, 32nd Central Regional Meeting of the **American Chemical Society**: The Ohio Valley Chromatography Symposium, Covington, Kentucky, **USA**, May 16-19, **2000**, Abstract # 154, p.114.
101. **A. Malik**, S. Bigham, J. Medlar, C. Ashford, A. Kabir, "Sol-gel Approach to *in situ* Creation of Surface Coatings and Monolithic Beds for analytical Microextraction," **Invited Lecture**, **EXTECH 2000**, University of Waterloo, Waterloo, **Canada**, May 1-3, **2000**, Abstracts p. 35.
100. **A. Malik**, "New Developments in Electromigration Microseparations and Their Potential in Pharmaceutical Analysis," **Invited Lecture**, Presented at Bausch and Lomb (Pharmaceutical Division), Tampa, Florida, **USA**, January 13, **2000**.
99. D.-X. Wang, J.D. Hayes, W.-H. Chang, A. Deakin, P.A. Mitchell, Y.D. Hong, **A. Malik**, "New Developments in Column technology for analytical Microseparations," **Plenary Lecture** 22nd **International Symposium** on Capillary Chromatography, Gifu, **Japan**, November 8-12, **1999**, Abstract # OP302.
98. D.-X. Wang, J.D. Hayes, T. J. Scott, **A. Malik**, "Sol-Gel Column Technology for Analytical Microseparations" **Plenary Lecture**, 20th **International Symposium** on Capillary Chromatography," Riva del Garda, **Italy**, May 25-29, **1998**.
97. J.D. Hayes, T.J. Scott, **A. Malik**, "Capillary Electrochromatography Columns with *in situ* Created Organic-Inorganic Hybrid Stationary Phases," **Plenary Lecture**, Second **International Symposium** on Capillary Electrochromatography, San Francisco, CA, **USA**, August 24-25, **1998**.
96. J.D. Hayes, T. J. Scott, **A. Malik**, "Sol-gel Open Tubular and Monolithic Columns for High Performance Electromigration Separation Techniques," **Plenary Lecture**, 2nd Asia-Pacific International Symposium on Capillary Electrophoresis and Related Microscale Techniques, Dalian, **China**, October 8-11, **1998**.

95. **A. Malik**, D.-X. Wang, W.-H. Chang, "New Developments in Sol-Gel Column Technology for High Resolution Gas Chromatography," **Invited Lecture**, Eastern Analytical Symposium, Somerset, New Jersey, **USA**, November 14-19, **1999**.
94. **A. Malik**, D.-X. Wang, J.D. Hayes, S.-L. Chong, "Sol-Gel approach to Column Technology in Analytical Separations," **Invited lecture** at the 169th Colloquium of the Department of Applied Chemistry, Tokyo Metropolitan University, **Japan**, November 6, **1999**.
93. **A. Malik**, D.-X. Wang, J.D. Hayes, S.-L. Chong, "Analytical Prospects of Sol-Gel Column Technology in Chromatographic Separations," **Invited lecture** at the Chemistry Department of Yeungnam University, Taegu, **South Korea**, November 4, **1999**.
92. **A. Malik**, D.-X. Wang, J.D. Hayes, S.-L. Chong, "Analytical Prospects of Sol-Gel Column Technology in Chromatographic Separations," **Invited lecture** at the Chemistry Department of **Kosin University, Pusan, Korea**, November 3, **1999**.
91. D.-X. Wang, W.-H. Chang, A. Deakin, A. P. Mitchell, J.D. Hayes, Y. D. Hong, **A. Malik**, "*Sol-gel Column Technology for Analytical Microseparation Techniques*," **Invited Lecture, Hewlett-Packard Co.** (Analytical Division), Little Falls, Wilmington, DE, **USA**, August 9, **1999**.
90. D.-X. Wang, W.-H. Chang, A. Deakin, A. P. Mitchell, J.D. Hayes, Y. D. Hong, **A. Malik**, "Sol-gel Approach to Column Technology for High Resolution Gas Chromatography: Current State and Future Prospects," **Invited Lecture, 21st International Symposium** on Capillary Chromatography, Park City, UT, **USA**, June 20-24, **1999**, Abstracts p. 29.
89. **A. Malik**, S.-L. Chong, D.J. Price, A. Deakin, and P.A. Mitchell, "Sol-Gel Coatings for Analytical Microextractions" **Invited Lecture**, ExTech 99: Advances in Extraction Technologies, Waterloo, **Canada**, April 26-28, **1999**, Abstracts p. 19.
88. S.-L. Chong, **A. Malik**, "Sol-gel Technology in Analytical Microextractions: Current Status and Future Potentials," **Invited Lecture, 1998 Eastern Analytical Symposium**, Somerset, NJ, **USA**, November 15-20, **1998**.
87. D.-X. Wang, F. Brignol, **A. Malik**, "Sol-Gel Technology for Highly Deactivated Surface-Bonded Stationary Phases in Capillary Gas Chromatography," **Invited Lecture**, 216th American Chemical Society **National Meeting**, Boston, MA, **USA**, August 23-27, **1998**.
86. J.D. Hayes, T. J. Scott, **A. Malik**, "Sol-gel Monolithic Columns for High Performance Electrochromatography," **Invited Lecture**, Fifth **International Symposium** on Capillary electrophoresis and Second International Symposium on Capillary Electrochromatography, York, **UK**, August 26-28, **1998**.

85. S.L. Chong, D. Wang, J.D. Hayes, **A. Malik**, "Sol-Gel Coating Technology in Analytical Separations and Sample Preparations," Invited **Lecture, Department of Chemistry, University of Miami**, Miami, Florida, **USA**, December 12, **1997**.
84. J.D. Hayes, J.W. Cramer, **A. Malik**, "Capillary Electrochromatography on Supercritically Dried Sol-gel Columns," **Invited Lecture, 1997 Eastern Analytical Symposium**, Somerset, NJ, **USA**, November 17-21, **1997**, Abstract #146, p.76.
83. Wang, D.-X.; S.-L. Chong, J.D. Hayes, **A. Malik**, "New Developments in the Column Technology for Analytical Microseparations," **Invited Lecture, Department of Chemistry, University of Washington**, Seattle, Washington, **USA**, October 13, **1997**.
82. **A. Malik**, J.D. Hayes, D. Wang, S.L. Chong, G.S. Corbett, Jeff W. Cramer, "Advanced Sol-gel Column Technology for Condensed-phase Microseparations," **Invited Lecture, 19th International Symposium on Capillary Chromatography and Electrophoresis**, Wintergreen, VA, **USA**, May 18-22, **1997**, pp. 54-55.
81. J. D. Hayes, **A. Malik**, "Sol-gel Chemistry Based Universal Approach to Column Technology for Electromigration Separation Techniques," **Invited Lecture, First Asia-pacific International Symposium on Capillary Electrophoresis and Other Nano- and Micro-scale Analytical Techniques**, **Singapore**, December 17-20, **1996**, Abstract p. 56.
80. J. D. Hayes, D.-X. Wang, S.-L. Chong, **A. Malik**, "Advanced Column Technology for Analytical Microseparations," **Invited Lecture, Department of Chemistry, Valdosta State University**, Valdosta, GA, **USA**, November 4, **1996**.
79. A. Malik, W. Li, **M.L. Lee**, "Application of Low-aspect Ratio Packed Capillary Columns in Supercritical Fluid Chromatography," **Invited Lecture, 16th International Symposium on Capillary Chromatography**, Riva del Garda, **Italy**, September 27-30, **1994**, Proceedings, pp. 1507-1514.
78. **A. Malik**, W. Li, Y. Shen, M.L. Lee, "Analytical Potential and Prospects of Packed Capillary Columns in Supercritical Fluid Chromatography," **Invited Lecture, 18th International Symposium on Column Liquid Chromatography**, Minneapolis, MN, **USA**, May 8-13, **1994**, Abstracts p. 81.

Oral Presentations

77. **A. Malik**, S.S. Segro, E.B. Turner, L. Fang, and M. Tran, "Sol-gel Germania- and Titania-based Microextraction Media for Solvent-free Sample Preparation in Trace Analysis," Oral Presentation at the Eastern Analytical Symposium, Somerset, NJ, November 16-19, **2009**

76. **A. Malik**, A. Kabir, W. Li, T.-Y. Kim, K. Alhooshani, "Sol-Gel Organic-Inorganic Hybrid Materials for Selective Enhancement and Ultra-Trace Analysis of Organic Pollutants in Aqueous Media," **Oral presentation** at the 56th Pittsburgh conference (Pittcon 2005), Orlando, Florida, **USA**, February 26- March 4, **2005**.
75. J. D. Hayes, **A. Malik**, "Sol-gel Column Technology for High Resolution Electromigration Microseparations Using *in situ* Generated Supercritical Fluids for Column Drying," **Eleventh International Symposium** on High Performance Capillary Electrophoresis and Related Microscale Techniques, Orlando, Florida, **USA**, February 1-5, **1998**; Abstracts, pp. 83-84.
74. **A. Malik**, S.-L. Chong, "Sol-gel Fibers Technology for Solid-phase Microextraction: State of the Art and Future Trends," Third **International Conference** on Sample Preparation, Orlando, Florida, **USA**, January 14-17, **1998**; Abstract S-004.
73. S.-L. Chong, D.-X. Wang, J.D. Hayes, **A. Malik**, "Sol-gel Coating Technology for Analytical separations and solventless sample preparations," **SEAAC '97**, University of South Florida, Tampa, Florida, **USA**, October 2-4, **1997**.
72. J.D. Hayes, **A. Malik**, "Monolithic Column Technology for High Performance Capillary Electrochromatography *via* Non-shrinking Gels and Supercritical Drying," **9th International Symposium** on High Performance Capillary Electrophoresis and Related Microscale Techniques," Anaheim, CA, **USA**, January 26-30, **1997**, Abstract pp. 80-81.
71. **A. Malik**, G.S. Corbett, "Recent Developments in Column Technology for Condensed Phase Microseparations." **20th International Symposium** on High Performance Liquid Phase Separations, San Francisco, CA, **USA**, June 16-21, **1996**, Abstract # L-2002.
70. W.M. Dickinson, G.S. Corbett, **A. Malik**, "Novel Surface Modification Techniques in Capillary Electrophoresis Column Technology," **22nd Annual Conference of the Federation of Analytical Chemistry and Spectroscopic Societies** (FACSS Xxii), Cincinnati, Ohio, **USA**, October 15-20, **1995**.
69. W.M. Dickinson, **A. Malik**, "Novel Surface Coatings in Capillary Electrophoresis Column Technology," **The 17th International Symposium** on Capillary Chromatography and Electrophoresis, Wintergreen, VA, **USA**, May 7-11, **1995**, Proceedings, pp.122-123.
68. W.M. Dickinson, **A. Malik**, "Novel Polymer-coated Capillary Electrophoresis Columns for High Performance Separation of Proteins, Peptides, and Nucleotides," **Annual Meeting of the Florida Sections American Chemical Society**, Orlando, FL, **USA**, May 5-6, **1995**, Abstract #39, P.35.

67. **A. Malik**, Z. Zhao, and M.L. Lee, "Polymer Coating Column Technology for High Performance Capillary Electrophoresis", **The 44th Pittsburgh Conference** on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA, **USA**, March 8-12, **1993**, Abstract #855.
66. **A. Malik**, S.L. Reese, B.A. Johnson, Y. Zhang, B. Haydock, B.E. Rossiter, J. Curtis, J.S. Bradshaw, and M.L. Lee, "New Cyanobiphenyl Stationary Phases for GC and SFC", **The 44th Pittsburgh Conference** on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA, **USA**, March 8-12, **1993**.
65. **J.D. Hayes**, A. Malik, "Ultra-high Efficiency Capillary Electrochromatography on Sol-gel Coated PDMS Columns," 1997 Annual Meeting of the Florida Sections American Chemical Society, Orlando, FL, **USA**, May 2-3, **1997**, Abstract #76, p. 44.
64. Z. Chen, G. Yi, **J.S. Bradshaw**, B.E. Rossiter, A. Malik, H. Yun, D.R. Black, S.S. Zimmerman, M.L. Lee, W. Tong, V.T. D'Souza, "New α -cyclodextrin-hexasiloxane Copolymers Prepared from 6^a 6^b -cyclodextrin Derivatives: Formation of α -cyclodextrin-containing Rotaxane Monomers and Copolymers," **209th American Chemical Society National Meeting**, Anaheim, CA, **USA**, April 2-6, **1995**, Abstract #: Orgn 324.
63. W. Li, A. Malik, **M.L. Lee**, "Application of Packed Capillary Columns in supercritical Fluid Chromatography," **5th International Symposium** on Supercritical Fluid Chromatography and Extraction, Baltimore, **USA**, Jan. 10-14, **1994** Abstracts, P. 4.
62. **P. Petersson**, S.L. Reese, G. Yi, H. Yun, A. Malik, J.S. Bradshaw, B.E. Rossiter, A. Malik, M.L. Lee, K.E. Markides, "Evaluation of 'Beta'-cyclodextrin Based Chiral Stationary Phases for Capillary Column Supercritical Fluid Chromatography," Proceedings of The **16th International Symposium on Capillary Chromatography**, Riva del Garda, **Italy**, September 27-30, 1994 (P. Sandra Ed., Huthig, **1994**, pp. 798-803).
61. **J.S. Bradshaw**, M.L. Lee, A. Malik, G.-L. Yi, W.-B. Li, K.E. Markides, "Rational Synthesis of High Performance Substituted Polysiloxane Stationary Phases for Capillary Chromatography," Proceedings of the **16th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, September 27-30, **1994** (P. Sandra Ed., Huthig, **1994**, pp. 288-299).
60. **S.L. Reese**, B.A. Johnson, A. Malik, J.S. Bradshaw, M.L. Lee, B.E. Rossiter, "Synthesis and Evaluation of Substituted Biphenylpolysiloxanes as Stationary Phases for Gas Chromatography," **207th American Chemical Society National Meeting**, San Diego, CA, **USA**, March 13-17, **1994**. Abstracts of Papers, Part 2, Abstract # Orgn 413.

59. **M.L. Lee**, G. Yi, A. Malik, H. Yun, J.S. Bradshaw, S.S. Zimmerman, B.E. Rossiter, P. Petersson, K.E. Markides, "Structural Characteristics and Performance of New Immobilized Cyclodextrin Stationary Phases in Capillary Column Gas Chromatography," **45th Pittsburgh Conference** on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, **USA**, February 27- March 4, **1994**, Abstract #578.
58. **M.L. Lee**, W. Li, Y. Shen, A. Malik, "Capillary Columns, Both Packed and Open Tubular, in Supercritical Fluid Chromatography," **45th Pittsburgh Conference** on Analytical Chemistry and Applied Spectroscopy, Chicago, IL, **USA**, February 27- March 4, 1994, Abstract #1009c.
57. G.-L. Yi, **J.S. Bradshaw**, P. Huszthy, C.-Y. Zhu, B.E. Rossiter, A. Malik, M.L. Lee, R.M. Izatt, K.E. Markides, P. Petersson, "Enantiomer Recognition by Chiral Host Molecules Including Oligosiloxane Co-polymers or Chiral Hosts Attached to Polysiloxane or Silica Gel" **International Symposium on Chiral Recognition**, Tokyo, **Japan**, April, **1993**.
56. **Z. Zhao**, A. Malik, M.L. Lee, "Monitoring Adsorption in Open Tubular Columns for Capillary Electrophoresis with Proteins and Peptide Standards", **44th Pittsburgh Conference** on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA, **USA**, March 8-12, **1993**, Abstract #856
55. M. Huang, Z. Zhao, Z. Liu, A. Malik, **M.L. Lee**, "Inert Surface Coatings for Capillary Zone Electrophoresis," **205th American Chemical Society National Meeting** (Division of Analytical Chemistry), Denver, CO, **USA**, March 28- April 2, **1993**.
54. G.-L. Yi, **J.S. Bradshaw**, P. Huszthy, B.E. Rossiter, A. Malik, M.L. Lee, R.M. Izatt, K.E. Markides, and P. Petersson, "Enantiomer Recognition by Chiral Host-oligosiloxane Copolymers or Chiral Hosts Attached to Polysiloxane or Silica," **205th American Chemical Society National Meeting** (Division of Analytical Chemistry), Denver, CO, **USA**, March 28- April 2, **1993**.
53. **M.L. Lee**, A. Malik, S. Morgan, S.L. Reese, G.-L. Yi, B.E. Rossiter, and J.S. Bradshaw, "Rational Design and Evaluation of New Stationary Phases for Capillary Column Gas Chromatography," **43rd Pittsburgh Conference** on Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, **USA**, March 9-12, **1992**, Abstract #501.
52. B.E. Rossiter, **S.L. Reese**, S. Morgan, A. Malik, J.S. Bradshaw, and M.L. Lee, "Synthesis of an Isomeric Series of Cyanobiphenyl-substituted Polysiloxanes and Use as Polar Gas and Supercritical Fluid Chromatographic Stationary Phases," **203rd American Chemical Society National Meeting**, San Francisco, CA, **USA**, April 5-10, **1992**, Abstract of Papers, Part II, Abstract No. Orgn 78.

Poster Presentations

51. S.S. Segro, W. Li, and A. Malik, "Sol-gel Column Technology for Early Diagnosis of Diseases, Poster Presentation at NanoBio Collaborative, University of South Florida, Tampa, FL, USA, March 11-12, **2010**.
50. L. Fang; S. Kulkarni; K. Alhooshani; **A. Malik**, *Germania-based, Sol - gel Hybrid Organic-Inorganic Coatings for Capillary Microextraction*. Abstracts of Papers, 236th ACS National Meeting, Philadelphia, PA, USA, Aug. 17-21, **2008**, AEI-001.
49. A. Shearrow, E. Turner, L. Fang, L. Nguyen, **A. Malik**, "Sol-Gel Immobilized Small Chain Poly(ethylene Glycol), at 2007 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2007**), Orlando, Florida, **USA**, May 10-12, **2007**
48. L. Fang, S. Kulkarni, K. Alhooshani, and **A. Malik**, "Sol-gel Germania Coatings for Capillary Microextraction," 2006 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2006**), Orlando, Florida, **USA**, May 11-13, **2006**. Abstract # 122.
47. S. Kulkarni, L. Fang, K. Alhooshani, and **A. Malik**, "Sol-gel Immobilized Cyano-PDMS Coating for Capillary Microextraction of Aqueous Trace Analytes," 2006 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2006**), Orlando, Florida, **USA**, May 11-13, **2006**. Abstract # 123
46. E.B. Turner, A. Shearrow, and **A. Malik**, "Sol-gel Poly(ethylene glycol) Materials for Capillary Microextraction," 2006 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2006**), Orlando, Florida, **USA**, May 11-13, **2006**. Abstract # 124
45. S.S. Segro, T.-Y. Kim, and A. Malik, "Sol-gel Polydimethyldiphenylsiloxane Coating for Capillary Microextraction," 2006 Florida Annual Meeting and Exposition of the American Chemical Society (**FAME 2006**), Orlando, Florida, **USA**, May 11-13, **2006**. Abstract # 125.
44. K. Alhooshani, T.-Y. Kim, and **A. Malik**, "Surface-bonded Sol-Gel Titania Hybrid Organic-Inorganic Coatings for Sample Preconcentration by Capillary Microextraction, "28th **International Symposium** on Capillary Chromatography and Electrophoresis, Las Vegas, **USA**, May 22-25, **2005**.
43. W. Li, D. Fries, **A. Malik**, Charged Sol-Gel Coatings for On-Line Preconcentration of Proteins and Amino Acids in Capillary Electrophoresis, Fifth **International Symposium** on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, **USA**, March 5-7, **2003**.

42. T.-Y. Kim, K. Alhooshani, A. Kabir, and A. Malik, "Hybrid Organic-Inorganic Sol-Gel Titania Coatings for Sample Extraction and Preconcentration for Gas- and Liquid-Phase Separation," Fifth **International Symposium** on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, **USA**, March 5-7, **2003**.
41. K. Alhooshani, and **A. Malik**, Sol-Gel Zirconia-based Hybrid Organic-Inorganic Stationary Phase For Capillary Microextraction and Chromatographic Analysis, Fifth **International Symposium** on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, **USA**, March 5-7, **2003**.
40. A. Kabir, C. Hamlet, C. Tolar and **A. Malik**, "Novel Sol-Gel Polytetrahydrofuran Coatings for Trace Analysis of Polar and Non-polar Analytes from Aqueous Media by Capillary Microextraction Coupled to Gas Chromatography," Fifth **International Symposium** on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, **USA**, March 5-7, **2003**.
39. J. Medlar, A. Kabir and **A. Malik**, "Effect of Coating Thickness in Capillary Microextraction with a Sol-gel Poly(dimethyldiphenylsiloxane) Coating," Fifth **International Symposium** on Advances in Extraction Technologies (ExTech 2003), St. Pete Beach, Florida, **USA**, March 5-7, **2003**.
38. D.-X. Wang, W.-H. Chang, A. Malik, "*Direct Gas Chromatographic Separation of Highly Acidic, Basic, and Polar Analytes, on Open Tubular Sol-gel Columns*," Twenty-first **International Symposium** on Capillary Chromatography and Electrophoresis, Park City, UT, **USA**, June 20-24, **1999**, Abstracts p.126.
37. S.-L. Chong, F. Brignol, A. Malik, "Extending the Scope of Solid-phase Microextraction via Sol-gel Fiber Technology," Twentieth **International Symposium** on Capillary Chromatography," Riva del Garda, **Italy**, May 25-29, **1998**, Poster # D20.
36. J. D. Hayes, T.J. Scott, and **A. Malik**, "Advanced sol-gel column technology for electromigration separation techniques" Eleventh **International Symposium** on High Performance Capillary Electrophoresis and Related Microscale Techniques, Orlando, FL, **USA**, February 1-5, **1998**; Abstract # P421, p. 204.
35. S.-L. Chong, B. Wilhite, and **A. Malik**, "Sol-gel Coating Technology for Thermally Stable Coatings in Solid-phase Microextraction," Proceedings, **19th International Symposium** on Capillary Chromatography and Electrophoresis, Wintergreen, VA, **USA**, May 18-22, **1997**, pp. 648-649.
34. J.D. Hayes, **A. Malik**, "Capillary Electrophoretic Performance of Sol-gel Columns with Supercritical Drying," Proceedings, **19th International Symposium** on Capillary Chromatography and Electrophoresis, Wintergreen, VA, **USA**, May 18-22, **1997**, pp.516-517.

33. D.X. Wang, **Abdul Malik**, "Sol-gel Technology for Coating and Deactivation of GC Columns with High Thermal Stability," Proceedings, **19th International Symposium** on Capillary Chromatography and Electrophoresis, Wintergreen, VA, **USA**, May 18-22, **1997**, pp. 268-269.
32. S.L. Chong, D. Wang, J.D. Hayes, and **A. Malik**, "Sol-gel Chemistry-based Poly (Dimethylsiloxane) Coated Fiber for Solid-phase Microextraction," 1997 Annual Meeting of the **Florida Sections American Chemical Society**, Orlando, FL, **USA**, May 2-3, **1997**. Abstract # P7, p. 57.
31. J.W. Cramer, **A. Malik**, "Transition Metal Alkoxide Based Sol-gel Column Technology for Capillary Electrophoresis," 1997 Annual Meeting of the **Florida Sections American Chemical Society**, Orlando, FL, **USA**, May 2-3, **1997**. Abstract # P6, p. 57
30. D.-X. Wang, **A. Malik**, "Sol-gel Chemistry-based Novel Approach to Column Technology for Gas Chromatography," 1997 Annual Meeting of the **Florida Sections American Chemical Society**, Orlando, FL, **USA**, May 2-3, **1997**, Abstract # P5, p. 56.
29. J. D. Hayes, **A. Malik**, "Advanced Sol-gel Column Technology for High Performance Electromigration Separation Techniques," **9th International Symposium** on High Performance Capillary Electrophoresis and Related Microscale Techniques," Anaheim, CA, **USA**, Jan. 26-30, **1997**, Abstract P. 242.
28. J. D. Hayes, A. Malik, "Advanced Sol-gel Column Technology for Electromigration Separation Techniques," **the 7th Annual Frederick Conference** on Capillary Electrophoresis," Frederick, Maryland, **USA**, October 21-23, **1996**. Abstract. P. 93.
27. **A. Malik**, "High Performance Capillary Electrophoresis of Basic Proteins and Nucleotides on Highly Cross-linked Polymer-coated Columns." Proceedings of the **18th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 20-24, **1996** (P. Sandra Ed., Huthig, **1996**, pp. 2165-2177).
26. J. D. Hayes, G.S. Corbett, D. Wang, A. Malik, "Sol-gel Process Mediated Advanced Column Technology for Microcolumn Separations," Proceedings of the **18th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 20-24, **1996** (P. Sandra Ed., Huthig , **1996**, pp. 496-504).
25. D. Wang, A. Malik, "Preparation and GC Performance of Sol-gel Technology Based Open Tubular Columns," Proceedings of the **18th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 20-24, **1996** (P. Sandra Ed., Huthig , **1996**, pp. 505-513).

24. A. Malik, "Capillary Electrophoresis of Cytochrome C Proteins Using Polymer-coated Fused Silica Columns," **8th International Symposium** on High Performance Capillary Electrophoresis, Orlando, Florida, **USA**, January 21-25, **1996**, Abstract #P411, p. 150.
23. G.S. Corbett, A. Malik, "Sol-gel Technology Mediated Single Step Method for the Preparation of Deactivated Packed Capillary Columns for Electrochromatography," **8th International Symposium** on High-Performance Capillary Electrophoresis, Orlando, Florida, **USA**, January 21-25, **1996**, Abstract #P634, P. 199.
22. W. Li, E. Ibanez, **M.L. Lee**, A. Malik, "Evaluation of a Fluorocarbon Bonded Silica Using Packed Capillary Column Supercritical Fluid Chromatography," Proceedings of the **17th International Symposium** on Capillary Chromatography and Electrophoresis, Wintergreen, VA, **USA**, May 7-11, **1995**, pp. 496-497.
21. W.M. Dickinson and **A. Malik**, "Effects of Cyclodextrin Stationary Phase Structural Features on Chiral Recognition by Capillary Chromatography," **Annual Meeting of the Florida Sections American Chemical Society**, Orlando, FL, **USA**, May 5-6, **1995**, Abstract #P1, P. 41.
20. P.Z. Liu, X. Ren, A. Malik, **M.L. Lee**, "Surface-modified Polymeric Hollow Fibers in Capillary Electrophoresis," Proceedings of the **16th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, September 27-30, 1994 (P. Sandra Ed., Huthig, **1994**, pp. 1933-1938).
19. E. Ibanez, W. Li, A. Malik, **M.L. Lee**, "Modifier Addition in Capillary Supercritical Fluid Chromatography," Proceedings of the **16th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, September 27-30, **1994** (P. Sandra Ed., Huthig, **1994**, pp. 1608-1615).
18. A. Malik, W.-b. Li, P. Peterson, K.E. Markides, **M.L. Lee**, "New Cyclodextrin-containing Polysiloxane Stationary Phases for Enantiomer Separations in Capillary Chromatography," Proceedings of the **16th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, September 27-30, **1994** (P. Sandra Ed., Huthig, **1994**, pp. 232-236).
17. P.Z. Liu, A. Malik, **M.L. Lee**, "High pH Stability and Applications of Surface-modified Polypropylene Hollow Fiber Columns for Capillary Electrophoresis," **6th International Symposium** on High Performance Capillary Electrophoresis, San Diego, CA, **USA**, Jan. 31-Feb. 3, **1994**, Abstract P-114 (p. 90).
16. A. Malik, P.Z. Liu, X. Ren, **M.L. Lee**, "Novel Surface Coatings for Fused Silica and Polymeric Hollow Fiber Columns in Capillary Electrophoresis," **6th**

- International Symposium** on High Performance Capillary Electrophoresis, San Diego, CA, **USA**, Jan. 31-Feb. 3, **1994**, Abstract P-115 (Page 90).
15. W. Li, A. Malik, G. Yi, J.S. Bradshaw, M.L. Lee, P. Petersson, and **M.L. Lee**, "Separation of Enantiomers by Open Tubular Column Supercritical Fluid Chromatography (SFC) Using Differently Tethered 'Beta'-cyclodextrin Stationary Phases," **5th International Symposium** on Supercritical Fluid Chromatography and Extraction, Baltimore, **USA**, Jan. 10-14, **1994**, Abstract C-7.
 14. N.L. Porter, B.A. Jones, B.E. Richter, A. Malik, W. Li, **M.L. Lee**, "Improved Resolution of Diesel Fuel Class Fractionation Using High Temperature and Packed Capillaries," **5th International Symposium** on Supercritical Fluid Chromatography and Extraction, Baltimore, **USA**, Jan. 10-14, **1994**, Abstract B-5.
 13. W. Li, A. Malik, **M.L. Lee**, "Supercritical Fluid Chromatography Using Packed Capillary Columns", **2nd European Symposium** on Analytical Supercritical Fluid Chromatography, Riva del Garda, **Italy**, May 27-28, **1993**, Abstracts, pp. 1-7.
 12. A. Malik, S.L. Reese, B.A. Johnson, Y. Zhang, B.E. Rossiter, J. Curtis, J.S. Bradshaw, **M.L. Lee**, "Cyanobiphenylpolysiloxanes: Universal Stationary Phases for Capillary Chromatography", Proceedings of the **15th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 24-28, **1993** (P. Sandra Ed., Huthig, **1993**, pp. 291-298).
 11. P.Z. Liu, A. Malik, M.C.J. Kuchar, W.P. Vorkink, **M.L. Lee**, "Polymeric Hollow Fibers for Capillary Zone Electrophoresis", Proceedings of the **15th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 24-28, **1993** (P. Sandra Ed., Huthig, **1993**, pp. 1500-1505).
 10. W. Li, A. Malik, **M.L. Lee**, "Supercritical Fluid Chromatography Using Packed Capillary Columns", Proceedings of the **15th International Symposium** on Capillary Chromatography, Riva del Garda, **Italy**, May 24-28, **1993** (P. Sandra Ed., Huthig, **1993**, pp. 1559-1565).
 09. A. Malik, Z. Zhao, **M.L. Lee**, "Polymer-coated Fused Silica Capillary Columns for Electrophoresis", Proceedings of the **14th International Symposium** on Capillary Chromatography, Baltimore, MD, **USA**, May 25-29, **1992** (M.L. Lee and P. Sandra Eds., pp. 559-565).
 08. A. Malik, I. Ostrovsky, S.R. Sumpter, S.L. Reese, B.E. Rossiter, J.S. Bradshaw, **M.L. Lee**, "SFC Using Selective Cyanobiphenylpolysiloxane Stationary Phases", **4th International Symposium** on Supercritical Fluid Chromatography and Extraction, Cincinnati, Ohio, **USA**, May 19-22, **1992**, Abstracts, P. 19-20.

07. A. Malik, **K. Jinno**, "Microcolumn Liquid Chromatography of Polycyclic Aromatic Hydrocarbons and Some Isomeric Compounds on Cyclodextrin Stationary Phases", Proceedings of the **12th International Symposium** on Capillary Chromatography, Kobe, **Japan**, September 12-16, **1990**, pp. 778-791.
06. V.S. Gavrichev, A.R. Jumaev, A. Malik, Yu. M. Borisov, I.A. Lvov, Yu. M. Lyubitov, V.I. Mikhailov, V.D. Sokovikh, V.N. Khokhlov, **V.G. Berezkin**, "Application of fused silica capillary micro-packed columns in gas chromatography-mass spectrometry," Fifth **Danube Symposium on Chromatography** (Yalta, **USSR**, November 11-16, **1985**), Abstracts, pp. 258-259.
05. A. Malik, V.S. Gavrichev, **V.G. Berezkin**, "Use of fused silica capillary micro-packed columns in gas chromatography," Budapest Chromatography Symposium (Budapest, **Hungary**, June 11-14, 1985).
04. **V.G. Berezkin**, A. Malik, V.S. Gavrichev, "Investigation of fused silica capillary micro-packed columns with pellicular sorbents," **Budapest Chromatography Symposium** (Budapest, **Hungary**, June 11-14, **1985**).
03. A. Malik, **V.G. Berezkin**, V.S. Gavrichev, "Gas chromatographic separation of organic compound mixtures on fused silica micropacked columns," **Fifth All-Soviet Conference** on Analytical Chemistry (Moscow, **USSR**, December 11-14, **1984**), Abstracts, p. 166.
02. A. Malik, **V.G. Berezkin**, V.S. Gavrichev, "Fused silica micro-packed columns in gas chromatography," **15th International Symposium** on Chromatography, Nurnberg, **Germany**, October 1-5, **1984**, p. 68.
01. A. Malik, **V.G. Berezkin**, V.S. Gavrichev, "Fused silica capillary packed columns in gas chromatography," **4th Danube Symposium** on Chromatography and **7th International Symposium** – Advances and Applications of Chromatography in Industry, Bratislava, **Czechoslovakia**, August 29- September 2, **1983**, Abstracts, Vol. I, p. A34.

TEACHING ACCOMPLISHMENTS

- **Recognized for excellence in teaching and mentorship at the doctoral level** as major professor of Scott S. Segro, winner of USF outstanding dissertation Award, **2010**.
- Served as the **Major Professor for sixteen Ph.D. students** (including eleven who have already received their doctoral degrees and eight others who are currently working in the lab), **Ten M.S. /M.A. students**, and **five** undergraduate Honors students.

- Served on the supervisory committees of more than **sixty Ph.D. students** and **thirty M.S. students** who have already earned their degrees.
- Served as the **mentor for more than eighty undergraduates** who performed their undergraduate research in my laboratory.
- Trained students and scientists from USA, Bangladesh, China, Cuba, Haiti, India, Jamaica, Korea (South), Kuwait, Japan, Malaysia, Mexico, Nigeria, Saudi Arabia, Spain, Turkey, UK, Venezuela, and Vietnam.
- Currently serving as the major professor of eight Ph.D. students. In addition, currently serving on the supervisory committees of more than twenty graduate students.
- Taught a wide range of undergraduate and graduate level courses.
Undergraduate courses:
General Chemistry (CHM 2046C), Elementary Analytical Chemistry (CHM 3120C), Historical Perspectives in Chemistry (CHM 4070), Methods of Instrumental Analysis (CHM 4130C), Methods of Chemical Investigation (CHM 4131C), and Undergraduate Research (CHM 4970).

Graduate level full courses:
Advanced Analytical Chemistry (CHM 6150) and Separations Chemistry (CHM 6938). Also, participated in team teaching of a course titled “Tools of Chemical Research”.
- Received **excellent teaching evaluation** from my students:
On a 5.0 scale, received an average of 4.6 for graduate level courses and 4.5 for undergraduate level courses taught over a nineteen-year period.
- **Outstanding Undergraduate Teaching Award**, University of South Florida Chemistry Department, **2003**.

SERVICE ACCOMPLISHMENTS

Service to USF Chemistry Department:

Over the past five years served the USF chemistry department in various capacities including:

- (a) Coordinator, Analytical Chemistry Division
- (b) Member, Advisory Committee
- (c) Graduate Council

- (d) Undergraduate Council
- (e) Instrument Committee
- (f) Liaison Committee
- (g) Graduate recruitment committee
- (h) Search Committee

Service to My Profession:

- Member, Editorial Advisory Board for Journal *Sample Preparation*, **2012-**
- Since 2004 I have been serving on the **scientific review panel for NIH** (Chemistry and Biophysics SBIR/STTR panel, Study section ZRG1BCMBL10). Also, serve as a grant proposal reviewer for NSF, and DOE.
- **Charter member**, National Academy of Inventors, **2010**.
- **Co-chair** of a special symposium titled “*Emerging Materials in Separation Science*,” at Pittsburgh Conference, Orlando, Florida, February 28 – March 5, **2010**.
- **General Chair** for 5th International Symposium of the Advances in Extraction Technology (ExTech) organized here in Tampa Bay Area (2003).
- **Editorial Advisory Board Member** of an International Journal- *Journal of Microcolumn Separations* (2001).
- **External examiner/official opponent** for Ph.D. dissertations carried out in Australia, Canada, Singapore, Sweden, and USA.
- **Referee for eleven leading international journals** on analytical chemistry and chromatographic separations.
- **Member, Scientific Committee for the International Symposium** on Extraction Technologies (ExTech).
- **Member of the international panel of judges** for Leslie S. Ettre Award in Chromatography, **since 2008**.

Service to My Community:

- **Served** on the Advisory Board of Tampa Palm Elementary school, Tampa, FL
- **Served** as a judge for Science Fair at Clerk Elementary School, Tampa, FL

- **Served** as a juror at Hillsborough County Circuit Court on two different occasions (July 23, 2007; February 16 and 17, 2009).