

BIOGRAPHICAL SKETCH

Abdul MALIK, Ph.D.

Associate Professor, Department of Chemistry, University of South Florida,
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Education: **Ph.D.**, Soviet Academy of Sciences (Former), Moscow, 1985.
 M.S., Peoples' Friendship University, Moscow, 1980.

Citizenship: **USA**

Professional Positions:

- Aug. 99-Present Associate 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. '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).

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. Ettre 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) Extensive Sample Preparation Resource titled “**The Wiley Handbook of Sample Preparation**,” Edited by J. Pawliszyn, Wiley, Hoboken, NJ, USA, **2010**.
 - (b) **Popular Analytical Chemistry Textbook** by Daniel C. Harris, (Ref. **Quantitative Chemical Analysis**, 6th edition, Freeman, New York, USA, **2003**);
 - (c) **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**).
- **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-**
- NSF 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 ZRG1BCMBL10) 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**.

RESEARCH ACCOMPLISHMENTS

Hirsch Index (h-index): 27 (According to Google Scholar)
i10-index 59 (According to Google Scholar)
Number of citations: 2800 (According to Google Scholar)

Publications: >140 publications including journal and patent publications.

Patents: 17 issued; 12 pending

National and International Symposia-related Activities:

Presentations: > 160 (made international Symposia on Chromatography held in USA, Belgium, Brazil, Canada, China, Colombia, France, Germany, Greece, Italy, Japan, Malaysia, Norway, Poland, and Singapore, South Korea). These presentations include-

Keynote lectures: 4
Plenary lectures: 16
Invited lectures: 90

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, Feb 28 - Mar 5, 2010.

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

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 Issued:

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

12. **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**).
11. **A. Malik**, C.-L. Jiang, "Particles with a Germania-based External Layer," US Provisional Patent Application No. 61/612,612. (Submitted March 19, **2012**).
10. **A. Malik**, C.-L. Jiang, L. Fang, "Separation Column with Germania-based Sol-gel Stationary phase," US Patent Application No. 13/150,935 (Filed June 1, 2011).
09. **A. Malik**, S.S. Segro, "Materials and Methods in Capillary Microextraction in Combination with High-Performance Liquid Chromatography," International Patent Application No. PCT/US11/32886 (filed on April 18, **2011**).
08. **A. Malik**, S.S. Segro, "Materials and Methods in Capillary Microextraction in Combination with High-Performance Liquid Chromatography," United States Patent Application No. US 13/641,640 (filed on April 18, **2011**).
07. **A. Malik**, C. Jiang, "Separation Column with Germania-based Sol-gel Stationary Phases", **US Provisional Patent Application** No. 61/350,302 (filed on June 01, **2010**).
06. **A. Malik** and K. Alhooshani, "Tube Structure with Sol-gel Zirconia Coating," **US Patent Publication** No. US20090250349 (October 8, **2009**).
05. **A. Malik**, L. Fang, "Germania-based Sorbent," Utility Patent Application **No. 12/272,362** Filed on November 17, **2008**. **US Provisional Patent Application No. 60/988,597**.

04. **A. Malik** and D.X. Wang, "Capillary Column and Method of Making", US Patent Application No. 11/499,258 (filed on August 3, **2006**); US Patent Publication No. 2007/0172960 A1 (published on July 26, 2007).
03. **A. Malik**, A. Kabir, "Polytetrahydrofuran-based Coating for Capillary Microextraction," US Patent Publication No. **US2006013981** (Jan 19, **2006**); US Patent Application No. 11/161004 filed on July 19, 2005; (US Provisional Patent Application No. 60/521,900 Filed on July 19, 2004); (USF Ref. No. 04B071PR); Attorney Docket No. 1372.270.PRC
02. **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**); US Patent Application No. 10/716,310 filed on November 18, 2003; International Patent Publication No. WO 02/094410 A1 20021128; US Provisional Patent Application No. Filed on May 18, 2001.
01. **A. Malik**, K. Alhooshani, "Tube Structure with sol-gel Zirconia coatings, and Method of Making," US Patent Publication No. US Patent Application No. **10/704,766** filed on Nov. 10, **2003** (USF Ref. # 02B068PRC).

Publications:

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 November 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.
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Presentations:

167. **A. Malik**, "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**.
166. **A. Malik**, "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**.
165. **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**).
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60. **J.S. Bradshaw**, M.L. Lee, A. Malik, G.-L. Yi, W.-B. Li, and 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).
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57. **M.L. Lee**, W. Li, Y. Shen, and 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.
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53. 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**.
52. **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.
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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.
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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

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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**.
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 31. J.W. Cramer and **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
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 26. J. D. Hayes, G.S. Corbett, D. Wang, and **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).
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 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 and **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, and **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, and 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).
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14. N.L. Porter, B.A. Jones, and B.E. Richter, **A. Malik**, W. Li, and 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.
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12. **A. Malik**, S.L. Reese, B.A. Johnson, Y. Zhang, B.E. Rossiter, J. Curtis, J.S. Bradshaw, and 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, and 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).
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09. **A. Malik**, Z. Zhao, and 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, and 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** and 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, "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 4.7 for graduate level courses and 4.6 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).