CURRICULUM VITAE
MICHAEL TSAPATSIS

Professor, Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN
tsapatsis@umn.edu, (612) 626-0920, **http://www.cems.umn.edu/research/tsapatsis/**
Born in Athens Greece on July 26, 1965; US Citizen since 2013.

Education

Postdoctoral Training, Chem. Eng., California Institute of Technology (with M.E. Davis)	**1994**
Ph.D., Chemical Engineering, California Institute of Technology (Advisor: G.R. Gavalas)	**1994**
MS, Chemical Engineering, California Institute of Technology	**1991**
Diploma, Chemical Engineering, University of Patras, Greece	**1988**

Professional Appointments

Amundson Chair in Chemical Engineering and Materials Science	**2/08-present**
Professor, University of Minnesota Twin Cities	**9/03- present**
Associate Professor (early tenure awarded), University of Massachusetts, Amherst	**9/99-9/03**
Assistant Professor, University of Massachusetts, Amherst	**9/94-9/99**
Research Fellow in Chemical Engineering, California Institute of Technology	**12/93-9/94**
Research Assistant, California Institute of Technology	**9/89-12/93**
Engineer, Research Institute of Chemical Engineering and High Temperature Chemical Processes, Greece	**9/88-9/89**

Honors/Awards/Recognition

National Academy of Engineering of the United States 2015
Election Citation: For design and synthesis of zeolite-based materials for selective separation and reaction.
Inorganic Materials Plenary: Honorary Session for Prof. Michael Tsapatsis
AIChE Annual Meeting, 11/16-21/2014, Atlanta, GA 2014
Breck Award (International Zeolite Association) http://www.iza-online.org 2013
Presented at each IZA conference to an individual or group for significant contribution to molecular sieve science and technology achieved since the last conference (co-awarded with prof J. Caro)
Alpha Chi Sigma Award for Chemical Engineering Research, AIChE 2013
Recognizes an individual's outstanding accomplishments in chemical engineering research. http://www.aiche.org/community/awards/alpha-chi-sigma-award-chemical-engineering-research
Lindsay Lecturer, Texas A&M University 2013
Author Profile in Angewandte Chemie in recognition of 10 publications in 10 years 2012
American Association for the Advancement of Science (AAAS) Fellow 2011
George W. Taylor Award for Distinguished Research, Institute of Technology, UMN 2008
Charles M.A. Stine Award (currently named Braskem Award for Excelence in Materials Engineering and Science), Materials Engineering & Sciences Division of AIChE 2007
Shell Land-Grant Chair in Chemical Engineering and Materials Science, UMN 2004-2007
Merck Sharp and Dohme Lectures, University of Puerto Rico, Mayaguez (11/06) 2006
Van Ness Lectures, Rensselaer Polytechnic Institute, Troy, NY (10/06) 2006
Robert W. Vaughan Lecture, California Institute of Technology (4/20/06) 2006
DB Robinson Distinguished Speaker, University of Alberta (4/06) 2006
Stratis V Sotirchos Memorial Lecture, FORTH/ICE-T, Greece (5/26/05) 2005
Honda Initiation Grant (with L Schmidt) 2004
G.C.A. Schuit Lecture, University of Delaware (5/14/2004) 2004
Outstanding Junior Faculty Award, College of Engineering, UMass-Amherst 1998
Camille Dreyfus Teacher-Scholar Award 1998
David and Lucile Packard Fellowship for Science and Engineering 1996
NSF CAREER Award 1996

National Center for Electron Microscopy/Department of Energy Fellow 1995
North American Membrane Society Fellowship 1993

Professional Activities

Session Chair, ZMPC'97, Tokyo, Japan 1997
Participant, National Academy of Engineering Frontiers of Engineering 1997
Participant, National Science Foundation Workshop on Self-Assembly 1998
Session Chair, North American Membrane Society Meeting 1998
Session Chair, 16th North American Catalysis Society Meeting (Zeolites and Microporous Cat.) 1999
Session Chair, AIChE Annual Meeting, Dallas, TX 1999
Session Chair, ZMPC'2000, Sendai, Japan 2000
Session Chair and Advisory Committee Member, ICCMR, Zaragosa, Spain 2000
Session Chair, AIChE Annual Meeting, Reno, Nevada 2001
Session Chair, AIChE Annual Meeting, Indianapolis, IN 2002
Participant, DOE Workshop on Catalysis 2002
Participant, DOE/NRC Workshop on Carbon Dioxide 2003
Participant, NSF Workshop on Catalysis 2003
Session Chair, AIChE Annual Meeting, San Francisco, CA 2003
International Conference on Inorganic Membranes (ICIM) – Sort Course on Membrane Synthesis 2004
Workshop on New Developments in Membranes and Transport (Organizer with T. Lodge) 2005
Session Chair: PACIFICHEM 2005
International Scientific Committee ICIM9, Norway 2006
International Scientific Committee 4th IZMM, Spain 2007
Session Chair, AIChE Annual Meeting, Salt Lake City 2007
International Scientific Committee ICIM 10, Tokyo, Japan 2008
International Scientific Committee ZMPC (Zeolites and Microporous Crystals) 2009
Symposium Organizer, Nanoporous Materials for Renewable Energy and Chemicals, PACIFICHEM, Hawaii 2010
Co-Organizer 5th International Zeolite Membrane Meeting (IZMM), Loutraki, Greece 2010
International Scientific Committee ZMPC (Zeolites and Microporous Crystals) 2011
Elected Council Member of International Zeolite Association 2013-2019
Elected Member of the Electorate Nominating Committee (ENC) of the Section on Industrial Science & Technology, American Association for the Advancement of Science (AAAS) 2014-2017
International Advisory Board Member, Petroleum Institute, Abu Dhabi, UAE 2014-2015

Reviewer of Journal Articles for: *Advanced Functional Materials, Advanced Materials, AIChE J., Angew. Chemie Int. Ed., Catalysis Letters, Chemistry of Materials, Chemical Engineering Science, Industrial and Engineering Chemistry Research, Journal of the American Chemical Society, Journal of the American Ceramic Society, Journal of Membrane Science, Microporous and Mesoporous Materials, Nature, Nature Materials, Science, and others (~70 papers per year)*

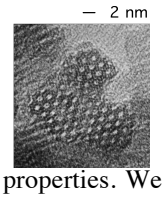
Reviewer of Proposals for: *ACS/PRF, NSF, DOE, European Union, Korea and Canada funding Agencies*

Consultant: *Various Companies and Law Firms* **2001-present**

Editorial Board Member: *Microporous and Mesoporous Materials* **2001-**
Annual Review of Chemical and Biomolecular Engineering **2013-2017**
Industrial and Engineering Chemistry Research **2013-2016**

Regional Editor, USA:
Microporous and Mesoporous Materials (editor for 150-200 manuscripts/year) **2008-2012**
Reviews Editor and Guest Editor
Microporous and Mesoporous Materials **2013-2014**

Professional Affiliations
American Institute of Chemical Engineers, American Chemical Society, Materials Research Society, American Association for the Advancement of Science, Catalysis Society of New England (Treasurer) 1997-2003



RESEARCH ACTIVITIES
Research Interests in Nanoscale Engineering of Materials for Separation, Reaction and Energy Applications: The focus of our work is in demonstrating innovative processing strategies for engineering functional devices and microstructures. These produce highly selective membranes and catalysts with tailored properties. We combine synthetic chemistry, processing, and characterization with careful evaluation of microstructures and properties. Our publications focus on molecular sieve synthesis, crystal structure elucidation, pattern formation, hierarchical materials, nanomanufacturing, morphology control, and incorporation in engineering devices.

Commercialization of Technology
Contributed to the development of Engelhard's Corporation (now BASF) Molecular Gates Technology, which is currently implemented for natural gas purification.
One patent has been licensed in 2010 (US Patent 8,263,035) and a product has been commercialized for use as size standard in the microelectronics industry by MSP Corporation.

Contributions to Research Centers
Thrust Leader of Furans Thrust, and Executive Committee Member, Catalysis Center for Energy Innovation 2009-
IRG Leader – Catalysis and Separations, and Executive Committee Member, ADMIRE 2009-2012

BIBLIOGRAPHY (including books, patents, and major papers published):
Journal Publications (~10,000 citations (~9,200 excluding self-citations); WebofScience *h index*=59)
(see also: http://scholar.google.com/citations?hl=en&user=bzIzJ6cAAAAJ&pagesize=100&view_op=list_works&cstart=100
~12,500 citations and h-index=63)

1. Submitted (2016) (with DeJaco R.F., Bai P., and Siepmann J.I.) *Adsorptive Separation of 1-Butanol from Aqueous Solutions Using MFI- and FER-type Zeolite Frameworks*
2. In Preparation (2016) (with Shah M.S., and Siepmann J.I.) *Identifying Optimal Zeolitic Sorbents for Sweetening of Highly Sour Natural Gas*
3. Submitted (2016) (with Ren L., Guo Q., Orazov M., Xu D., Politi D., Kumar P., AlHassan S.M., Mkhoyan K.A., Sidiras D. and Davis M.E.) *Pillared Sn-MWW Prepared by Solid-state-exchange Method and its Use as a Lewis-acid Catalyst*
4. Submitted (2016) (with Zhang H., Xiao Q., Guo X., Li N., Kumar P., Rangnekar N., Jeon M.Y., Al-Thabaiti S., Narasimharao K., Topuz B., Onorato F., Macosko C., Mkhoyan K.A.) *Open-pore 2-dimensional Zeolite MFI Nanosheets and their use for the Fabrication of Hydrocarbon Isomer-selective Membranes on Porous Polymer Supports*
5. Submitted (2016) (with Khaleel M., Xu W. and Lesch D.A.) *Combining Pre- and Post-nucleation Trajectories for the Synthesis of High FAU-content Faujasite Nano-crystals from Organic-Free Sols*
6. Submitted (2016) (with Malonzo C.D., Shaker S.M., Prinslow S.D., Platero-Prats A.E., Gallington L.C., Ren L., Borycz J., Thompson A.B., Wang T.C., Farha O.K., Hupp J.T., Lu C.C., Chapman K.W., Myers J.C., Penn R.L., Gagliardi L. and Stein A.) *Thermal Stabilization of Metal–Organic Framework-Derived Single-Site Catalytic Clusters Through Nanocasting*
7. **MRS Bulletin** Accepted (2016) (with Rimer J.D.) *Nucleation of Open Framework Materials: Navigating the Void*

8. **AIChE Journal** Accepted (2016) (with Lima F.V. and Daoutidis P.) *Modeling, Optimization and Cost Analysis of IGCC Plants with Membrane Reactors for Carbon Capture*
9. **AIChE Journal** Accepted (2016) (with Elyassi B., Jeon M.Y., Narasimharao K., Basahel S.N. and Al-Thabaiti K.A.) *b-oriented Silicalite-1 Membranes Made by Gel-Free Secondary Growth of Silicalite-1 Seed Layers and their High Pervaporation Performance in Ethanol/Water Mixture Separation*
10. **Chemistry of Materials** 27(24), 8198-8210 (2015) (with Labropoulos A., Veziri C., Kapsi M., Pilatos G., Likodimos V., Kanellopoulos N., Romanos G., and Karanikolos G.) *Carbon Nanotube Selective Membranes with sub-Nanometer Vertically Aligned Pores, and Enhanced Gas Transport Properties* DOI: 0.1021/acs.chemmater.5b01946
11. **Langmuir** 31(44), 12268-12278 (2015) (with Shah M. and Siepmann J.I.) *Monte Carlo Simulations Probing the Adsorptive Separation of Hydrogen Sulfide/Methane Mixtures using All-silica Zeolites* DOI: 0.1021/acs.langmuir.5b03015
12. **Chemical Society Reviews** 44(20), 7128-7154 (2015) (with Rangnekar N., Mittal N., Elyassi B. and Caro J.) *Zeolite Membranes - A Review and Comparison with MOFs* DOI: 10.1039/C5CS00292C
13. **Angew. Chem. Int. Ed.** 54(37), 10848-10851 (2015) (with Ren L., Guo Q., Kumar P., Orazov M., Xu D., AlHassan S.M., Mkhoyan A. and Davis M.E.) *Self-pillared, Single-Unit-Cell Sn-MFI Zeolite Nanosheets and Their Use for Glucose and Lactose Isomerization* DOI: 10.1002/anie.201505334
14. **Journal of Physical Chemistry** 119(23), 7041-7052 (2015) (with Shah M. and Siepmann J.I.) *Development of the Transferable Potentials for Phase Equilibria Model for Hydrogen Sulfide* DOI: 10.1021/acs.jpcb.5b02536
15. **Nature Communications** 6, Article Number 7128 (2015) (Kumar P., Agrawal K.V. and Mkhoyan K.A.) *Quantification of Thickness and Wrinkling of Exfoliated 2-Dimensional Zeolite Nanosheets* DOI:10.1038/ncomms8128
16. **Advanced Materials** 27(21), 3243-3249 (2015) (with Agrawal K.V., Topuz B., Pham T.C.T., Nguyen T.H., Sauer N., Rangnekar N., Zhang H., Narasimharao K., Basahel S.N., Francis L.F., Macosko C.W., Al-Thabaiti K.A. and Yoon K.B.) *Oriented MFI Membranes by Gel-less Secondary Growth of Sub-100nm MFI Nanosheet Seed Layers* DOI: 10.1002/adma.201570146 *Featured in one of the journal covers.*
17. **Angew. Chem. Int. Ed.** 54(22), 6571-6575 (2015) (with Ragnekar N., Shete M., Agrawal K.V., Topuz B., Kumar P., Narasimharao K., Ismail I., Alyoubi A., Basahel S.N., Francis L.F., Macosko C.W., Mkhoyan K.A., Stottrup B. and Al-Thabaiti K.A.) *2D Zeolite Coatings: Langmuir-Trough Deposition of 3nm-thick MFI Zeolite Nanosheets* DOI: 10.1002/anie.201411791
18. **Topics in Catalysis** 58(7-9), 545-558 (2015) (with Swindlehurst G.R., Kumar P., Xu D., Alhassan S.M., Mkoyan K.A.) *Nucleation, Growth, and Robust Synthesis of SPP Zeolite: Effect of Ethanol, Sodium, and Potassium (Invited Contribution in Honor of Mark E. Davis)* DOI: 10.1007/s11244-015-0396-7
19. **RSC Advances** 5(23), 18035-18040 (2015) (with Navarro M., Mateo E., Diosdado B., Guell C. and Coronas J.) *Activation of Giant Silicalite-1 Monocrystals Combining Rapid Thermal Processing and Ozone Calcination* DOI: 10.1039/c4ra16284f
20. **Nature Communications** 6, Article Number 5912 (2015) (with Bai P., Jeong M.Y., Ren L., Knight C., Deem M.W. and Siepmann J.I.) *Discovery of Optimal Zeolites for Challenging Separations and Chemical Transformations Using Predictive Materials Modeling* DOI: 10.1038/ncomms6912
21. **Chemical Engineering Science** 126, 186-195 (2015) (with Al Wahedi Y., Torres A.I., Al Hashimi S., Dowling N.I. and Daoutidis P.) *Economic Assessment of Temperature Swing Adsorption Systems as Claus Tail Gas Clean Up Units* DOI: 10.1016/j.ces.2014.12.015

22. **Microporous and Mesoporous Materials** 200, 287-290 (2014) (with Liu D., Zhang X. and Bhan A.) *Activity and Selectivity Differences of External Bronsted Acid Sites of Single-Unit-Cell Thick and Conventional MFI and MWW Zeolites (Invited Contribution, in Honor of Thomas Bein's 60th Birthday)* DOI:10.1016/j.micromeso.2014.06.029

23. **Journal of Physical Chemistry C** 118(40), 22815-22833 (2014) (with Caratzoulas S., Davis M. E., Gorte R.J., Gounder R., Lobo R.F., Nikolakis V., Sandler S.I., Snyder M.A. and Vlachos D.G.) *Challenges of and Insights into Acid-Catalyzed Transformations of Sugars (Invited Contribution, Journal Cover)* DOI:10.1021/jp504358d

24. **Chemical Engineering Research and Design** 92(9), 1781-1791 (2014) (with Sidiras D., Batzias F. and Konstantinou I.) *Simulation of Autohydrolysis Effect on Adsorptivity of Wheat Straw in the Case of Oil Spill Cleaning* DOI: 10.1016/j.cherd.2013.12.013

25. **Angew. Chem. Int. Ed.** 53(36), 9456-9461 (2014) (with Khaleel M., Wagner A.J. and Mkhoyan K.A.) *On the Rotational Intergrowth of Hierarchical FAU/EMT* DOI:10.1002/anie.201402024

26. **ChemPhysChem** 15(11), 2225-2229 (2014) (with Bai P., Olson D.H. and Siepmann J.I.) *Understanding the Unusual Adsorption Behavior in Hierarchical Zeolite Nanosheets* DOI: 10.1002/cphc.201402189

27. **Chemical Engineering Science** 116, 235-242 (2014) (with Rajabbeigi N., Torres A.I., Lew C.M., Elyassi B., Ren L., Wang Z., Cho H.J., Fan W. and Daoutidis P.) *On the Kinetics of Isomerization of Glucose to Fructose using Sn-Beta* DOI: 10.1016/j.ces.2014.04.031

28. **Microporous and Mesoporous Materials** 190, 152-154 (2014) (with Elyassi B. and Zhang X.) *Long-term Steam Stability of MWW Structure Zeolites (MCM-22 and ITQ-1)* DOI: 10.1016/j.micromeso.2014.02.007

29. **Microporous and Mesoporous Materials** 193, 134-144 (2014) (with Elyassi B., Al Wahedi Y., Rajabbeigi N., Zhang X., Kumar P., Kumar P., Vathillingam B.V., Katsiotis M.S., Mkhoyan K.A., Boukos N. and Al Hashimi S.) *A High-Performance Adsorbent for Hydrogen Sulfide Removal* DOI: 10.1016/j.micromeso.2014.03.012

30. **Biomaterials Science** 2(4), 548-559 (2014) (with Atchison N., Papas K.K. and Kokkoli E.) *Maintenance of Ischemic β Cell Viability through Delivery of Lipids and ATP by Targeted Liposomes* DOI: 10.1039/C3BM60094G

31. **Fluid Phase Equilibria** 362, 118-124 (2014) (with Keasler S.J., Bai P. and Siepmann J.I.) *Concentration Effects on the Selective Extraction of Ethanol from Aqueous Solution Using Silicalite-1 and Decanol Isomers* DOI: 10.1016/j.fluid.2013.09.034

32. **Advanced Functional Materials** 24(2), 201-208 (2014) (with Xu D., Swindlehurst G.R., Wu H., Olson D.H. and Zhang X.) *On the Synthesis and Adsorption Properties of Single-Unit-Cell Hierarchical Zeolites Made by Rotational Intergrowths*- Invited contribution for *Special Issue on Porous Materials* DOI: 10.1002/adfm.201301975 – Featured as frontispiece of the issue

33. **Microporous and Mesoporous Materials** 184, 72-82 (2014) (with Yoo W.C., Rajabbeigi E., Mallon E. and Snyder M.A.) *Elucidating Structure-Properties Relations for the Design of Highly Selective Carbon-Based HMF Sorbents* DOI: 10.1016/j.micromeso.2013.10.001

34. **Journal of Physical Chemistry C** 117(46), 24375-24387 (2013) (with Bai P. and Siepmann J.) *TraPPE-Zeo: Transferable Potentials for Phase Equilibria Force Field for All-Silica Zeolites* DOI: 10.1021/jp4074224

35. **Current Opinion in Chemical Engineering** 2(3), 320-324 (2013) (with Bhan A.) *Zeolites with Nanometer Diffusion Lengths and Implications in Shape Selective Catalysis* DOI: 10.1016/j.coche.2013.06.001

36. **Langmuir** 29(22), 6546-6555 (2013) (with Mallon E., Navarro M., Jeon M.Y. and Bhan A.) *Probing the Relationship between Silicalite-1 Defects and Polyol Adsorption Properties* DOI: 10.1021/la4001494

37. **AIChE Journal** 59(9), 3459-3467 (2013) (with Agrawal K.V., Topuz B., Navarro M., Nguenkam K., Elyassi B. and Francis L.) *Solution–Processable Exfoliated Zeolite Nanosheets Purified by Density Gradient Centrifugation*- Invited contribution in *Founders Tribute to Professor Neal R. Amundson* DOI: 10.1002/aic.14099

38. **Journal of Membrane Science** 436, 79-89 (2013) (with Lee S. and Choi J.) *On the performance of c-Oriented MFI Zeolite membranes Treated by Rapid Thermal Processing* DOI: 10.1016/j.memsci.2013.02.028

39. **Langmuir** 29(15), 4866-4876 (2013) (with Santander J.E. and Auerbach S.M.) *Simulating Adsorptive Expansion of Zeolites: Application to Biomass-Derived Solutions in Contact with Silicalite* DOI: 10.1021/la300932a

40. **Industrial & Engineering Chemistry Research** 52(5), 1901-1907 (2013) (with Castarienas S., Gorgojo P., Casado-Coterillo C., Maheshwari S., Tellez C. and Coronas J.) *Melt Compounding of Swollen Titanosilicate JDF-L1 with Polysulfone to Obtain Mixed Matrix Membranes for H_2/CH_4 Separation* DOI: 10.1021/ie3031136

41. **Microporous and Mesoporous Materials** 172, 7-12 (2013) (with Sung C.-Y., Al Hashimi S., McCormick A. and Cococcioni M.) *A DFT Study on Multivalent Cation-Exchanged Y Zeolites as Potential Selective Adsorbent for H_2S* DOI: 10.1016/j.micromeso.2012.12.006

42. **Microporous and Mesoporous Materials** 170, 1-8 (2013) (with Kim E. and Choi J.) *On Defects in Highly a-Oriented MFI Membranes* DOI: 10.1016/j.micromeso.2012.11.023

43. **Langmuir** 28(44), 15566-15576 (2012) (with Bai P. and Siepmann J.) *Multicomponent Adsorption of Alcohols onto Silicalite-1 from Aqueous Solution: Isotherms, Structural Analysis and Assessment of Ideal Adsorbed Solution Theory* DOI: 10.1021/la303247c

44. **ACS Nano** 6(11), 9978-9988 (2012) (with Kim W.-G., Xueyi Z., Lee J.S. and Nair S.) *Epitaxially Grown Layered-MFI/Bulk-MFI Hybrid Zeolitic Materials* DOI: 10.1021/nn3036254

45. **Langmuir** 28(34), 12647-12654 (2012) (with Cychosz C.A., Guo X., Fan W., Cimino R., Gor G.Y., Neimark A.V. and Thommes M.) *Characterization of the Pore Structure of Three-Dimensionally Ordered Mesoporous Carbons Using High Resolution Gas Sorption* DOI: 10.1021/la302362h

46. **Industrial & Engineering Chemistry Research** 51(27), 9250-9259 (2012) (with Zhang H., Suszynski W., Varoon Agrawal K., Al Hashimi S. and Francis L.F.) *Coating of Open Cell Foams* DOI: 10.1021/ie300266p

47. **Science** 336, 1684-1687 (2012) (with Zhang X., Liu D., Xu D., Asahina S., Cychosz K., Varoon K., Al Wahedi Y., Bhan A., Al Hashimi S., Terasaki O. and Thommes M.) *Direct Synthesis of Self-Pillared Zeolite Nanosheets by Repetitive Branching*. DOI: 10.1126/science.1221111

48. **Microporous and Mesoporous Materials** 158, 253-256 (2012) (with Rajabbeigi N. and Ranjan R.) *Selective Adsorption of HMF on Porous Carbons from Fructose/DMSO Mixtures*. DOI: 10.1016/j.micromeso.2012.03.047

49. **Industrial and Engineering Chemistry Research** 51(14), 5364-5366 (2012) (with Lew C. and Rajabbeigi N.) *One-Pot Synthesis of 5-(Ethoxymethyl)furfural from Glucose using Sn-BEA and Amberlyst Catalysts*. DOI: 10.1021/ie2025536

50. **Industrial and Engineering Chemistry Research** 51(15), 5480-5489 (2012) (with Lima F., Marano J. and Daoutidis P.) *Modeling and Optimization of Membrane Reactors for Carbon Capture in IGCC Units*. DOI: 10.1021/ie202234u

51. **Computers and Chemical Engineering** 42, 130-137 (2012) (with Ines Torres A. and Daoutidis P.) *Biomass to Chemicals: Design of an Extractive Reaction Process for the Production of 5-Hydroxymethylfurfural*. DOI: 10.1016/j.compchemeng.2011.12.013

52. **Chemical Communications** 48(16), 2249-2251 (2012) (with Li D., Qiu L., Wang K., Zheng Y., Li D., Williams T., Huang Y. and Wang H.) *Growth of Zeolite Crystals with Graphene Oxide Nanosheets*. DOI: 10.1039/c2cc17378f

53. **Journal of Physical Chemistry** 116(5), 3561-3575 (2012) (with Sung C.-Y., Al Hashimi S., McCormick A. and Cococcioni M.) *A DFT Study on the Adsorption of H_2S and other Claus Process Tail Gas Components on Cu- and Ag- Exchanged Y Zeolites*. DOI: 10.1021/jp2097313

54. **Microporous and Mesoporous Materials** 153, 55-58 (2012) (with Lew C. and Rajabbeigi N.) *Tin-Containing Zeolite for the Isomerization of Cellulosic Sugars*. DOI:10.1016/j.micromeso.2011.12.020

55. **Angew. Chem. Int. Ed.** 51(10), 2470-2473 (2012) (with Stoeger J.A., Palomino M., Varoon K.A., Zhang X., Karanikolos G.N., Valencia S. and Corma A.) *Oriented CoSAPO-5 Membranes by Microwave-Enhanced Growth on TiO2-Coated Porous Alumina*. DOI: 10.1002/anie.201108042

56. **Microporous and Mesoporous Materials** 149, 147-157 (2012) (with Yoo W.C., Zhang X. and Stein A.) *Synthesis of Mesoporous ZSM-5 Zeolites through Desilication and Re-assembly Processes*. DOI:10.1016/j.micromeso.2011.08.014

57. **Microporous and Mesoporous Materials** 147(1), 286-294 (2012) (with Stoeger J.A., Veziri C.M., Palomino M., Corma A., Kanellopoulos N.K. and Karanikolos G.) *On Stability and Performance of Highly c-Oriented Columnar AlPO4-5 and CoAPO-5 Membranes*. DOI:10.1016/j.micromeso.2011.06.028

58. **Science** 334, 72-75 (2011) (with Varoon K., Zhang X., Elyassi B., Brewer D., Gettel M., Kumar S., Lee J.A., Maheshwari S., Mittal A., Sung C.-Y., Cococcioni M., Francis L.F., McCormick A.V. and Mkhoyan A.) *Dispersible Exfoliated Zeolite Nanosheets and Their Application as a Selective Membrane*. DOI: 10.1126/science.1208891

59. **Bioresource Technology** 102, 10486–10492 (2011) (with Sidiras D., Batzias F., and Ranjan R.) *Simulation and Optimization of Batch Autohydrolysis of Wheat Straw*. DOI: 10.1016/j.biortech.2011.08.059

60. **Journal of Physical Chemistry B** 115(39), 11431-11438 (2011) (with Mallon E.E., Babninaue J.J., Kranz J.I., Guefrachi Y., Siepman J.I. and Bhan A.) *Correlation for Adsorption of Oxygenates onto Zeolites from Aqueous Solutions*. DOI: 10.1021/jp208143t

61. **Langmuir** 27(18), 11669-11670 (2011) (with Brewer D.D., Shibuta T., Francis L. and Kumar S.) *Coating Process Regimes in Particulate Film Production by Forced-Convection-Assisted Drag-Out*. DOI:10.1021/la202040x

62. **Microporous and Mesoporous Materials** 146, 127-133 (2011) (with Kumar P., Sung C.-Y., Muraza O., Cococcioni M., Al Hashimi S. and McCormick A.) *H_2S adsorption by Ag and Cu Ion Exchanged Faujasites*. DOI:10.1016/j.micromeso.2011.05.014

63. **Energy & Environmental Science** 4(9), 3479-3486 (2011) (with Stoeger J.A., and Choi J.) *Rapid Thermal Processing and Separation Performance of c-Oriented MFI Membranes on Porous Stainless Steel Tubes*. DOI: 10.1039/c1ee01700d

64. **ChemSusChem** 4(8), 1151-1156 (2011) (with Skinner M.J., Michor E., Fan W., Bhan A. and Schmidt L.D.) *Ethanol Dehydration to Ethylene in a Stratified Autothermal Millisecond Reactor*. DOI: 10.1002/cssc.201100026

65. **Journal of the American Chemical Society** 133(32), 12390–12393 (2011) (with Chen H., Wydra J., Zhang X., Lee P.-S. and Fan W.) *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-imprinted (3DOm-i) Structure*.DOI: 10.1021/ja2046815

66. **Chemical Engineering Journal** 171(3), 883-896 (2011) (with Sidiras D., Batzias F., Schroeder E. and Ranjan R.) *Dye Adsorption on Autohydrolyzed Pine Sawdust in Batch and Fixed-bed Systems*. DOI: 10.1016/j.cej.2011.04.029

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218. **Polymer**, 60, 1861-1866 (1989) (with Tsitsilianis, C. and Economou C.) *Effects of Crystallinity on Aging Phenomenon in Poly(vinyl chloride)*.

Perspectives/Editorials

219. **AIChE Journal** 60(7), 2374-2381 (2014) *2-Dimensional Zeolites* (Appeared on the cover).

220. **Angew. Chem. Int. Ed.** 51(2), 8926 (2012) *Author Profile: Michael Tsapatsis* DOI: 10.1002/anie.201202071

221. **Science** 334, 767-768 (2011) *Towards High-Throughput Zeolite Membranes*.

222. **ChemCatChem** 2(3), 246-248 (2010) (with Fan W.) *A New, Yet Familiar, Lamellar Zeolite*. DOI: 10.1002/cctc.200900278

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Proceedings

225. *On the Role of Renucleation and Crystal Incorporation During Secondary Growth of Precursor (Seed) Zeolite Layers* (with Gouzinis A., Boudreau L., Xomeritakis G.) in B.K. Markus, Treacy M.M.J., Higgins J.B. and Bisher M.E. (eds.) " Proceedings of the 12th International Zeolite Conference"

226. *Microstructural Characterization of an Oriented Silicalite Film* (with Lovallo M.C.), in P.Lednor, Ledoux M., Nagaki D. and Thompson L. (eds.) "Advanced Catalytic Materials III", Materials Research Society (Presented in the 1996 Fall MRS Meeting)

227. *Preparation of Supported Zeolite Films and Layers: Processing of Zeolite Suspensions and In Situ Growth from Homogeneous Solutions* (with Lovallo M. and Boudreau L.) in R.F. Lobo, Beck J.S., Suib S.L., Corbin D.R., Davis M.E., Iton L.E. and Zones S.I. (eds.) "Microporous and Macroporous Materials", Materials Research Society, Vol 431 (1996) 225-236 (Presented in the 1996 Spring MRS Meeting)

228. *Continuum and Stochastic Modeling on the Role of Gel Microstructure in Zeolite Crystallization* (with Vlachos D.G.) in R.F. Lobo, Beck J.S., Suib S.L., Corbin D.R., Davis M.E., Iton L.E. and Zones S.I. (eds.) "Microporous and Macroporous Materials", Materials Research Society, Vol 431(1996) (Presented in the 1996 Spring MRS Meeting)

229. *Synthesis and Structure of Ultrafine Zeolite KL (LTL) Crystallites and their Use for Thin Film Zeolite Processing*, (with Okubo T., Lovallo M. and Davis M.E) in Komarneni S., Smith D.M. and Beck J.S. (eds.) "Advances in Porous Materials", Materials Research Society, Vol 371 (1995) 21-26 (Presented in the 1994 Fall MRS Meeting)

Book Chapters

230. *Zeolite Films* (with S. Nair) in Auerbach et al. (ed.), "Handbook of Microporous Materials", Marcel Dekker, Inc. (2003) 867-919, Chpt. 17

231. *Chemical Vapor Deposition Membranes* (with Gavalas G.R. and Xomeritakis G.) in N. K. Kanellopoulos (ed.), "Recent Advances in Gas Separation by Microporous Ceramic Membranes", Elsevier (2000) 397-416, Chpt.3.4

232. *Nanocrystalline Zeolites: Synthesis Characterization and Applications with Emphasis on Zeolite L Nanoclusters* (with Lovallo M.C.) in W.M. Moser (ed.), "Advanced Catalysts and Nanostructured Materials", Academic Press (1996) 307-343, Chpt.13

Book Editing

Ordered Nanoporous Solids: Recent Advances and Prospects, Valtchev V., Mintova S., Tsapatsis M. (Editors) Elsevier (2008)

Patents

1. "An Improved Method for Forming H_2-permselective Oxide Membranes" Gavalas G.R., Tsapatsis M., Nam S.W. and Kim S., U.S. Patent 5,453,298 (1995)
2. "Layered Silicate Material and Applications of Layered Silicates with Porous Layers" Tsapatsis M., Nair S. and Jeong H.K., U.S. Patent 6,863,983 B2 (2006)
3. "Layered Silicate Material and Applications of Layered Silicates with Porous Layers" Tsapatsis M., Nair S. and Jeong H.K., U.S. Patent 7,087,288 B2 (2006)
4. "Mixed Matrix Membranes" Marand E., Pechar T. and Tsapatsis M., U.S. Patent 7,109,140 (2006)
5. "Crystalline Membranes" Tsapatsis M. and Lai Z., U.S. Patent 7,357,836 (2008)
6. "Forming Nanoparticles in Basic Amino Acid-Silica Sols" Tsapatsis M., Davis T.M., Snyder M. and Lee J.A., US Patent 8,263,035 (2012)
7. "Layered Zeolite materials and Methods Related Thereto" Tsapatsis M., Maheshwari S., Koros W. and Bates F.S., US Patent 8,501,068 B2 (2013)
8. "Method and Apparatus for Producing a Fuel from a Biomass or Bio-oil" Bhan A., Dauenhauer P.J., Schmidt L.D. and Tsapatsis M., US Patent 8,702,822 (2014)
9. "One-Step Synthesis of Mesoporous Pentasil Zeolite with Single-Unit-Cell Lamellar Structural Features" Tsapatsis M. and Zhang X.; US Patent 9,180,413 (2015)
10. "Molecular Sieve Membranes and Thermal Treatment Methods for Making the Same" Tsapatsis M., Choi J. and Jeong H.K., US Patent 9,120,680 B2 (2015)
11. "Zeolite Nanosheet Membrane" Tsapatsis M. and Agrawal K.V., US Patent Application 14/130,589
12. "Silica Support Structure for a Zeolite Membrane" Tsapatsis M., Agrawal K.V. and Francis L.F., US Patent Application 14/327,720
13. "Regenerable System for the Removal of Sulfur Compounds from a Gas Stream" Tsapatsis M., Elyassi B., Al Wahedi Y. and Al Hashimi S. PCT/US2014/064832
14. "Adsorbent Material for Removing H_2S" Tsapatsis M., Balasubramanian V.V., Al Wahedi Y. and Al Hashimi S. PCT/US2015/055324
15. "Zeolites for Separation of Ethanol and Water" Siepmann I., Bai P. and Tsapatsis M. PCT/US15/41566
16. "Zeolites for Hydrocarbon Conversion" Siepmann I., Bai P., Deem M. and Tsapatsis M. PCT/US15/41544
17. "Pore Opened Zeolite Nanosheets and their Suspensions and Methods and Uses Related there to" Tsapatsis M., Xiao Q. and Zhang H. Filed 12/2015

INVITED TALKS

1. Pacific Northwest National lab, 03/22/2016
2. Brookhaven National Lab, 03/11/2016
3. Rutgers University, 03/10/2016
4. ACS Spring National Meeting, Invited Talk, Ipatieff Prize: Symposium in honor of Aditya Bhan: *Controlling Zeolite Growth at the Single Unit Cell Level: Implications for Membranes and Catalysis*, San Diego, 03/13-17/2016
5. University of Massachusetts Amherst, ExxonMobil Lecture, 03/08/2016
6. University of California Santa Barbara, 02/09/2016

7. University of Connecticut, 12/03/2015
8. International Symposium on Zeolites and MicroPorous Crystals, Plenary Lecture, Japan 06/28-07/02/2015 (http://www.zmpc.org)
9. Argonne National Lab, 05/18/2015
10. 3M, 05/20/2015
11. ACS Spring National Meeting, Invited Talk in *Design of Materials and Chemical Processes: the Genomic Approach*, Denver, Colorado, 03/22-26/2015
12. University of South Carolina, 03/12/2015
13. KAU, 02/24/2015
14. KAUST, 02/23/2015
15. Columbia University in the City of New York, 02/17/2015
16. Iowa State University, 01/29/2015

17. Purdue University, 12/02/2014
18. Council for Chemical Research/NIST workshop on *Measurement Needs in the Adsorption Sciences*, NIST, 11/06/2014
19. Pennsylvania State University, 10/23/2014
20. Gordon Research Conference on Membranes and Membrane Processes, Colby-Sawyer College in New London, NH 7/6-10/2014
21. Centre National de Recherche Technologique Matériaux, MEET EC consortium on "Zeolites: synthesis and application", Paris, 6/30/2014
22. Princeton University, 4/2/2014
23. ACS Spring National Meeting, Invited Talk in Gabor Somorjai Award Symposium in Honor of Mark E. Davis, 3/16-20/2014.

24. 1st International Symposium on Mesoporous Zeolites, ACS National Meeting, 9/9-10/2013
25. Gordon Research Conference on Nanoporous Materials and their Applications 08/11-16/2013
26. International Zeolite Membrane Meeting, IZMM-6, Opening Plenary Talk (Korea) 06/15-19/2013
27. Tulane University, 05/03/2013
28. Lindsay Lecturer, Texas A&M (01/15/2013)
29. Invited Speaker at the Catalysis Club of Chicago (01/07/2013)

30. MRS Fall Meeting, Symposium T, Membrane Material Platforms and Concepts for Energy Environment and Medical Applications, Invited talk (11/29/2012)
31. Northeastern University (11/28/2012)
32. Tufts University (11/26/2012)
33. Center for Catalysis and Energy Innovation (11/07/2012)
34. University of Washington, Seattle (10/08/2012)

35. Institute on the Environment, University of Minnesota (09/21/2011)
36. 5th International FEZA Conference, Plenary Talk, Valencia, Spain (07/03-07/07/2011)
37. NSF Workshop on Developing New Paradigms for Biofuel Separations in Thermo-Catalytic Processes (04/2011)

38. Acid/Base and Zeolite Catalysis, American Chemical Society (ACS) National Meeting (03/28/2011)
39. Arizona State University (03/11/2011)

40. US-Poland Workshop on Nanoscale Phenomena in Materials and at Interfaces, Krakow (06/7-10/2010)
41. 3rd Workshop on Layered Materials, Plenary Talk on Thin Films, Bochum, Germany (05/14-15/2010)
42. American Ceramic Society Meeting, Microporous and Mesoporous Materials (01/24-29/2010)

43. Silicon by the Sea, San Diego (12/9-11/2009)
44. EPFL, Lausanne (02/11/2009)
45. 5th Sino-US Conference of Chemical Engineering, Beijing (10/12-16/2009)
46. University of Alberta, Edmonton, 24/09/20009
47. The XXIInd Annual British Zeolite Association Conference, Plenary, Ambleside, UK (08/23-38, 2009)
48. North American Membrane Society Meeting, Session in Honor of Ed Cussler, NC (06/20-24/2009)

49. University of New York Buffalo 12/3/08
50. Gordon Research Conference on Membranes (08/10-14/2008)
51. Gordon Research Conference on Catalysis (06/22-26/2008)
52. Gordon Research Conference on Nanoporous Materials (06/15-19/2008)
53. EMCC5 Italy (05/24-29/2008)
54. The Role of Structure in Biological, Chemical and Environmental Separations: From the Molecular to the Macro, Costa Rica (01/6-11/2008) (unable to attend, lecture delivered by J Alex Lee)

55. 2007 ACS Fall Annual Meeting, Boston (Invited Talk) Session in Honor of LE Scriven
56. 2007 ACS Fall Annual Meeting, Boston (Invited Talk) Advanced Materials for Conversions and Separations in Energy Applications
57. 2007 AIChE Annual Meeting, Materials Engineering & Sciences Division Plenary Session (9/07)
58. 2007 Spring MRS Meeting, Symposium R: Transport in Heterogeneous Materials (04/07)

59. Princeton University (11/06)
60. 2006 AIChE Annual Meeting, San Francisco, CA, Session in Honor of Professor Ma (11/06)
61. 2006 AIChE Annual Meeting, San Francisco, CA, Nanoscale Science and Engineering Forum (NSEF) Plenary Session: Chemical Engineering Principles in Nanotechnology (11/06)
62. Merck Sharp and Dohme Lecturer, University of Puerto Rico, Mayaguez (11/06)
63. 2006 Puerto Rico ACS Senior Technical Meeting, Plenary Speaker (11/06)
64. Van Ness Lectures, Rensselaer Polytechnic Institute, Troy, NY (10/06)
65. ZMPC Japan, Keynote Lecturer (unable to attend, lecture delivered by Tracy Davis) (8/06)
66. Distinguished Lecture Series, University of Alberta (4/06)
67. Robert W. Vaughan Lectureship, California Institute of Technology (3/06)
68. Advance Distinguished Lecture, Kansas State University (2/06)

69. PACIFICHEM, Invited Talk (12/05)
70. Stratis V Sotirchos Memorial Lectureship (5/26/05)
71. University of Stocholm (5/12/05)
72. Interfacial Water Workshop, Plenary Speaker, Santa Fe (4/25/05)
73. University of Rochester (3/30/05)
74. ACS Annual Meeting (Invited Talk at Symposium in Honor of ME Davis' Murphree Award) (3/16/05)

75. ACS Annual Meeting (Invited Talk on Nucleation and Growth of Nanostructured Materials) (3/16/05)

76. IGERT Seminar Series, University of Minnesota (9/24/04)
77. Argonne National Lab (8/16/04)
78. International Conference on Inorganic Membranes—Short Course on Membrane Synthesis (7/18/04)
79. University of Patras, Greece (6/9/04)
80. National Technical University, Athens Greece (7/1/04)
81. UOP/LLC (5/19/04)
82. Ohio State University, Chemical Engineering and Materials Science; IGERT Lecture Series (5/03/04)
83. University of Delaware (2004 Schuit Memorial Lecture) (5/14/04)
84. Pall Corporation (5/13/04)
85. Rice University (4/20/04)

86. Materials Science and Engineering Plenary Session, AICHE Annual Meeting, San Francisco (11/03)
87. ZMPC (Japan) (8/2003) (Conference Canceled)
88. ExxonMobil, Annandale (4/03)
89. Ohio State, Analytical Chemistry (4/03)

90. MIT, Boston (8/02)
91. Gordon Conference on Zeolitic and Layered Materials, Mount Holyoke College, June 16 - 21, 2002
92. Brookhaven National Laboratory (4/02)
93. University of Minnesota (4/02)
94. ExxonMobil, Annandale (2/02)

95. University of California, Davis (10/01)
96. WPI, Worcester (9/01)
97. 2nd International Workshop on Zeolite Membranes, The Netherlands (7/01)
98. City College, New York (2/5/01)
99. University of California, Santa Barbara (1/11/01)

100. Philadelphia Catalysis Club (12/2000)
101. PQ Corporation (12/2000)
102. University of Illinois, Urbana (10/2000)
103. University of Michigan, AnnArbor (10/2000)
104. University of Misouri, Rolla (10/2000)
105. ZMPC Post-Conference: State-of-the-Art in Molecular Sieve Science (8/2000)
106. ZMPC (Japan) (8/2000)
107. Gordon Research Conference on Membranes Materials and Processes (6/2000)
108. University of Texas, Austin (5/2000)
109. University of Cincinnati (5/2000)
110. Purdue University (5/2000)
111. University of Colorado, Boulder (4/2000)
112. General Electric (4/2000)
113. Virginia Polytechnic Institute (4/2000)
114. University of Houston (1/2000)

115. Research Institute of Chemical Engineering, Patras, Greece (12/1999)
116. 1st International Workshop on Zeolite Membranes, Japan (6/98)
117. UCLA, 5/1/98
118. University of Wisconsin (11/99)
119. 1999 Spring MRS Meeting (3/99)

120. University of Washington, Seattle (3/1/99)
121. University of Tokyo 1/21/99

122. North East Corridor Zeolite Association (12/98)
123. Georgia Institute of Technology (10/98)
124. Gordon Research Conference on Separation and Purification (8/98)
125. Gordon Research Conference on Catalysis (6/98)
126. CALTECH, 4/30/98
127. USC, 4/29/98
128. Tufts University, 4/10/98
129. Cornell University, 3/98
130. DOW Chemicals, 2/98
131. Northwestern University, 26/2/98

132. University of Tokyo, 2/9/97
133. ETH Zurich, 4/6/97
134. Gordon Research Conference on Zeolites, Plymouth State College, 6/15-20/97
135. Exxon Research and Engineering Co., New Jersey, 4/9/97

136. Air Products and Chemicals, PA, 11/96
137. Mobil Technology Co., MRCTEC Paulsboro, New Jersey, 10/15/96
138. Amoco Chemicals, Amoco Research Center, Naperville IL, 8/30/96
139. Engelhard Co., New Jersey, 6/15/96
140. 1996 Spring MRS Meeting Session P6: Thin Films and Adsorption, 4/8-12/96, San Francisco, CA

GRADUATE STUDENTS AND POST-DOCTORAL FELLOWS

Former Ph.D. Graduate Students

UMASS-Amherst

Mark C. Lovallo (Ph.D. '98 – Flow Smart Inc., USA), Laura Boudreau (Ph.D. '99 – Chevron, USA) , Hugh Hillhouse (Ph.D.'01 – Rehnberg Chair Professor, University of Washington-Seattle, USA), Vladimiros Nikolakis (Ph.D.'01 co-advised with Dion Vlachos, W.L. Gore, USA), Sankar Nair (Ph.D.'03 – Professor and JF Simmons Faculty Fellow, Georgia Tech, USA), Griselda Bonilla (Ph.D. '04 co-advised with DG Vlachos –Senior Manager, IBM TJ Watson Research), Scott Fisher (Ph.D. '04 co-advised with J Watkins – Sabic, USA), Harikrishanan Ramanan (Ph.D. '04 co-advised with Scott Auerbach, GE, Singapore), Zhiping Lai (Ph.D. '04, Associate Professor, KAUST, Saudi Arabia), Maybelle Woo (Ph.D. '07, Millipore, USA),

University of Minnesota

Hae Kwon Jeong (Ph.D. '05, Associate Professor- Texas A&M University, USA)
John Krohn (Ph.D. '06, -BP, USA)
Tracy Davis (Ph.D. '07, Chevron, USA)
Sunho Choi (Ph.D. '08, Assistant Professor, Northeastern University USA)
Jungkyu Choi (Ph.D. '08, Assistant Professor, Korea University, South Korea)
Joshua Sheffel (Ph.D. '09, Elevance Renewable Sciences, USA)
Sudeep Maheshwari (Ph.D. '09 co-advised with FS Bates, A.T. Kearny, USA)
Alex Lee (Ph.D. '10 co-advised with LE Skip Scriven, Saint-Goben, USA)
Sandeep Kumar (Ph.D. '10 co-advised with R. Lee Penn, Intel, USA)
Rajiv Ranjan (Ph.D. '10 United Technologies, USA)
Damien Douglas Brewer (Ph.D. '11 co-advised with Satish Kumar, E-Ink, USA)
Pyung-Soo Lee (Ph.D. '11, Korea Research Institute of Chemical Technology)
Jared Stoeger (Ph.D. '12, Intel, USA)
Elizabeth Emma Mallon (Ph.D. '12, co-advised with Aditya Bhan, Intel, USA)
Nicole Atchison (Ph.D. '12, co-advised with Efrosini Kokkoli, R&D Engineer, Covidien, USA)
Xueyi Zhang (Ph.D. '13, postdoc at UC Berkeley and then Assistant Professor, Penn State, USA)
Kumar Varoom Agrawal (Ph.D. '13, co-advised with Lorraine Francis, Assistant Professor, EPFL, Lausanne, Switzerland)
Anna Ines Torres Ripa (Ph.D. '13, co-advised with Prodromos Daoutidis, Assistant Professor, Universidad de la Republica, Uruguay)
Peng Bai (Ph.D. '14, mainly advised by J. Ilja Siepmann, postdoctoral fellow, UMN, USA)
Garrett Swindlehurst (Ph.D. '14, co-advised by Efrosini Kokkoli and Klearchos Papas, Praxair, USA)
Yasser Al Wahedi (Ph.D. '15, Assistant Professor, Petroleum Institute, Abu Dhabi)
Maryam Khaleel (Ph.D. '15, Assistant Professor, Petroleum Institute, Abu Dhabi)
Mi Young Jeon (Ph.D., Expected in April 2016, Intel, USA)

Former MS Graduate Students

Anastasios Gouzinis (MS '99 – Athens Technology Center, Greece), Khristina Sujaoti (MS' 02- did not pursue employment), Chuan He (MS' 06; employed at government position in China), Aruna Ramikkrishnan (co-advised with Marc Hillmyer, MS'2011, continued graduate study at UMN), James Wydra (MS'2011, continued graduate study at the University of Colorado, Boulder), Yasser Al Wahedi (co-advised with Saleh Al Hashimi – Petroleum Institute, UAE; MS 2012; continued for Ph.D. with Tsapatsis), Wanlu Zhang (co-advised with Lorraine Francis, MS'2014).

Former Visiting Graduate Students (stayed in group for more than 1 year):

Zhuopeng Wang (University of Aveiro)
Huiyong Chen (Assistant Professor, Department of Chemical Engineering in Northwest University – China)

Former Post-doctoral Fellows

UMASS-Amherst

Carola Braunbarth (SusTech GmbH & Co., Germany)

Neil Fernandes (Accumentrics, Manager, USA)
George Xomeritakis (UOP-LLC, USA)
Geraldo Nery (Associate Professor, UNESP-Sao Paulo State University, Brazil)
Raman Ravishankar (Atomic Energy Center, India)

University of Minnesota
Isabel Diaz (Tenured Scientist, Instituto de Catálisis, Madrid, Spain)
Subhajit Gosh (Halliburton)
Tim Drews (OsiSoft, California, USA)
George Karanikolos (Assistant Professor, The Petroleum Institute, UAE)
Stavros Caratzoulas (Associate Director for Computational Chemistry, CCEI, Univ. of Delaware)
Nick Ergang (Nalco, USA)
Mark Snyder (Assistant Professor, Lehigh University)
Wei Fan (Assistant Professor, University of Massachusetts Amherst)
Parveen Kumar (Total, Mumbai)
Dongxia Liu (co-advised with Aditya Bhan, Assistant Professor, University of Maryland)
Chun-Yi Sung (co-advised with Matteo Cococcioni and Alon McCormick, Postdoctoral fellow, Northwestern University)
Christopher Lew (Chevron)
Fernando Lima (co-advised with Prodromos Daoutidis, Assistant Professor, West Virginia University),
Won Cheol Yoo (CCEI Fellow, co-advised with Mark Snyder-Lehigh University, Assistant Professor, Hanyang University, South Korea)
Berna Topuz (Assistant Professor, Chemical Engineering Department, Ankara University, Turkey).
Aparna Iyer (Saint-Goben, India)
Nafiseh Rajabbeigi (TBD)
Balasubramanian Veerappan Vaithilingam (Abu Dhabi Oil Refining Company Research Center (Takreer), UAE)

Former Visiting Professors
Xianghai Guo, Najun Li, Qiang Xiao, Jianhua Yang

Current Research Group at UMN
Post-Doctoral Fellows
Bahman Elyassi
Limin Ren
Qiang Guo
Donghun Kim
Xiaoli Ma
Han Seung Lee
Balasubramanian Veerappan Vaithilingam
Sabrina Conrad

Ph.D. Candidates
Dandan Xu
Neel Rangnekar
Han Zhang (co-advised with Chris Macosko)
Mansi Shah (co-advised with Ilja Siepmann)
Prashant Kumar (co-advised with Andre Mkhoyan)
Meera Shete
Nittish Mittal (co-advised with Prodromos Daoutidis)
Yasmine Guefrachi

Graduate Students
Feng Xue (2nd year)
Matheus Dorneles De Mello (1st year)
Xuekui Duan (1st year)

RESEARCH FUNDING (while at the University of Minnesota 2003-2013)
Completed Projects (September 2003 – December 2013)
Summary for Tsapatsis share for grants expired in the period 2003-2014:
External Funding: $7,250,000
Internal Funding: $450,000

DOD (subcontract from UC Riverside) (PI): Zeolite Coatings
Amount: $395,000
Duration: 05/15/03-04/31/07

NSF/NIRT (subcontract from UMASS) (PI with one co-PI: Kokkoli):
An Interdisciplinary Approach to Understanding the Growth of Nanoporous Materials
Amount: $176,000 ($150,000 for MT)
Duration: 01/01/04- 6/15/05

NSF/EPA (PI): Layered Silicates with Microporous Layers
Amount: $300,000
Duration: 09/01/03-08/31/06

DOE (PI): A Novel Concept for the Fabrication of H_2-Selective Membranes
Amount: $275,000
Duration: 06/01/04-05/31/07

NSF/NIRT (PI with 5co-PIs: Bates, Kokkoli, Marand, Nair, Koros):
Fabrication of hollow fiber polymer/porous-layer nanocomposite membranes for gas separations
Amount: $1,464,000 ($400,000 for MT)
Duration: 08/01/04-07/31/08

HONDA INITIATION GRANT (with L Schmidt)
Amount: $50,000 ($25,000 for MT)
Duration: 12/01/04-11/30/05

PALL Co.: Nanocomposite Membranes
Amount: $98,651
Duration: 01/03/05-12/31/05

NSF/MRSEC Seed Grant: TEM investigation of twinning in MFI (with L Penn)
Amount: $38,000 ($19,000 for MT)
Duration: 06/01/04-05/31/05

NSF: High-Flux High-Selectivity MFI Molecular Sieve Membranes
Amount: $290,000
Duration: 09/01/05-08/31/08

UOP: IPRIME Membership
Amount: $50,000
Duration: 12/01/05-11/30/06

IREE (co-PI with 4 co-PIs: Smyrl (PI)): Renewable Hydrogen Energy for the Farm
Amount (direct cost allocated to MT): $124,000
Duration: 06/01/05-05/31/08

MSI: Fellowship to Postdoctoral Fellow Mark Snyder
Amount: $20,000
Duration: 06/06-05/07

DNP: IPRIME Membership
Amount: $30,000
Duration: 01/01/07-01/01/08

NSF/MRSEC Seed Grant: TEM investigation of twinning in MFI (with R.L. Penn, A McCormick, A Stein)
Amount: $60,000 ($15,000 for MT)
Duration: 08/01/08-07/31/07

GIA, University of Minnesota (PI)
Amount: $38,000
Duration: 06/06-06/07
Acquisition of SAXS Equipment

Carbon Nanotube Membranes by Templated Growth in Oriented Molecular Sieve Films
Source of Support: PRF/ACS
Total Award Amount: $90,000
Award Period Covered: 09/01/07-08/31/09

UOP IPrime Membership
Amount: $50,000
2007

NIRT Precise Building Blocks for Hierarchical Nanomanufacturing of Membranes with Molecular Resolution
(PI with: Hillmyer, McCormick, Penn, Stein)
Source of Support: NSF
Total Award Amount: $1,280,000 ($350,000 for MT)
Award Period Covered: 9/1/07-8/31/11

Novel Molecular Sieve Processes for Efficient Biorefinery
(PI, with Bhan, Daoutidis, McCormick)
Source of Support: Institute on the Environment, UMN
Total Award Amount: $296,761 ($100,000 for MT)
Award Period Covered: 7/1/07 – 6/30/09

Treatment of Biomass Hydrolyzates
Source of Support: BTI
Total Award Amount: $30,000
Award Period Covered: 09/01/07-08/31/08

Center for Nanostructured Applications (co-PI with Pappas): Cell Encapsulation
Amount (direct cost): $80,000 ($40,000 for MT)
Duration: 09/01/08-08/31/10

Petroleum Institute and ADGas Co., UAE (PI): Molecular Sieve Membranes and Solid Adsorbents for the Selective Removal of Dilute H_2S in the Claus Process Tail Gas
Amount: $223,000
Duration: 10/01/08-08/31/09

NSF (PI with Bhan and Daoutidis): Integrated Reaction-Separation Processes for Production of Hydroxymethylfurfural from Fructose using Molecular Sieves
Amount: $200,000 ($100,000 for MT)
Duration: 6/1/2009 -5/31/2011

Petroleum Institute, UAE (PI): ADMIRE (Abu Dhabi – Minnesota Research and Education)

IRG-1 Leader and co-PI on 2 projects
Amount allocated for MT: approximately $1,250,000
Duration: 1/1/2009 -12/31/2011

NSF (PI): EAGER: Colloidal Crystal Membranes for Encapsulation of Porcine Islets
Amount: $47,954
Duration: 10/01/09-09/30/10

NSF CREST: Nanotechnology Center for Biomedical and Energy-Driven Systems and Applications
Subcontract from University of Puerto Rico Mayaguez
Amount: $ 28,500
Duration: 01/11/09-8/31/10

Petroleum Institute and ADGas Co., UAE (PI): Molecular Sieve Membranes and Solid Adsorbents for the Selective Removal of Dilute H_2S in the Claus Process Tail Gas
Amount: $150,000
Duration: 04/01/10-08/31/11

Petroleum Institute and ADGas Co., UAE (PI): Molecular Sieve Membranes and Solid Adsorbents for the Selective Removal of Dilute H_2S in the Claus Process Tail Gas
Amount: $269,000
Duration: 1/12/11 – 12/31/12

UOP LLC Synthesis of nanocrystalline faujasite
Amount: $127,215
Duration: 05/01/11-04/30/12

IREE (PI with 5 co-PIs: Bhan, Cussler, Daoutidis, Kittelson, Schmidt) Biofuels for the Farm: New Technologies for Production of Biofuels in Small Systems
Amount $600,000 ($100,000 for MT)
Duration: 09/01/2009 -08/31/2013

NSF (PI with 4 co-PIs: Bhan, Floudas, Schmidt, Vlachos) EFRI-HyBi: Conversion of Biomass to Fuels using Molecular Sieve Catalysts and Millisecond Contact Time Reactors
Amount: $ 1,956,112 ($300,000 for MT)
Duration: 9/1/2009 -8/31/2013

US Department of Energy; EFRC Subcontract from the University of Delaware – DG Vlachos, Director (PI of the UMN subcontracts with 2 co-PIs Bhan, Daoutidis): Rational Design of Innovative Catalytic Technologies for Biomass Derivative Utilization
MT is IRG Leader of Sugar Conversion Team and Executive Committee Member
Amount of UMN subcontract: $1,600,000 ($1,100,000 for MT)
Duration: 8/1/2009 -7/31/2014

US Department of Energy (PI with 1 co-PI: Daoutidis): Hydrogen Selective Exfoliated Zeolite Membranes
Amount: $794,000 and $200,000 UMN match ($750,000 to MT)
Duration: 9/1/2009 -8/31/2014

KAU (PI): Zeolite Nanosheets for Water Purification
Amount: $500,000
Duration: 1/1/14-12/31/15

Ongoing Projects
Summary for Tsapatsis share for on going grants:
External Funding: $6,300,000
Internal Funding: $100,000

ARPA-E (PI with 2 co-PIs: Daoutidis and Macosko): Flexible Zeolite Membranes
Amount: $1,900,000 ($1,600,000 to MT)
Duration: 3/1/2013 -10/1/2016

Petroleum Institute and ADGas Co., UAE (PI): Molecular Sieve Membranes and Solid Adsorbents for the Selective Removal of Dilute H_2S in the Claus Process Tail Gas
Amount: $830,000
Duration: 1/12/13 – 6/30/16

ExxonMobil (PI): Xylene Enrichment Using Membranes
Amount: $350,045
Duration: 1/12/13 – 6/30/16

US Department of Energy (PI: Laura Gagliardi and 14 co-PIs including Tsapatsis): Nanoporous Materials Genome: Methods and Software to Optimize gas Storage, Separations and Catalysis
Amount to MT: $375,000
Duration: 9/1/12-9/1/17

Smaller Awards: A MRSEC Seed Grant and Support from Industrial Sponsors of IPrime.
Amount to MT: ~20,000/year

Petroleum Institute, UAE (PI): Hierarchical Zeolite Catalysts for the Oil Refinery
Amount: $1,499,000
Duration: 1/1/14-12/31/18

EFRC (PI) Subcontract from Energy Frontier Research Center for Gas Separations Relevant to Clean Energy Technologies. University of California, Berkeley (UC Berkeley) proposal for an Energy Frontier Research Center (DE-FOA-0000987)
Amount: $800,000
Duration: 9/1/14-8/31/18

EFRC (PI with Dauenhauer and Siepmann) Subcontract from Energy Frontier Research Center: Catalysis Center for Energy Innovation. University of Delaware, proposal for an Energy Frontier Research Center (DE-FOA-0000987)
Amount: $1,400,000 (~$500,000 for MT)
Duration: 9/1/14-8/31/18

EERE (PI with Siepmann) Subcontract from University of Wisconsin: Catalytic Processes for Production of a,w-diols from Lignocellulosic Biomass.
Amount: $660,000 ($350,000 for MT)
Duration: 3/1/15-2/28/18

DEPARTMENTAL SERVICE

Faculty Search Committee Chair: 2004-2005, 2005-2006, 2006-2007, 2011-2012, 2012-2013 (co-chair with L. Francis), 2013-2014
(Professors Kevin Dorfman, Aditya Bhan, Xiang Cheng, David Flannigan,Vivian Ferry, Samira Azarin, Paul Dauenhauer and Matthew Neurock were hired as a result of these searches)

Member of Faculty Search Committee: 2007-2008

Coordinator for External Faculty Awards: 2011-2014

Coordinator of Piercy Visiting Professorship: 2010-2014

Member, Committee for Assistant (now Associate) Professor Aditya Bhan

Chair, Committee for Assistant Professor Kechun Zhang

TEACHING

Taught 1 course per semester. Courses taught at the University of Minnesota:
ChEn 8501/ ChEn 4708 - Reaction Engineering (Graduate course) (main instructor 2003 – 2013)
ChEn 4601 - Process Control (recitation instructor)
ChEn 4502- Product Design (section instructor)
ChEn 4501W - Process Design (recitation and main instructor)
ChEn 4002 - Transport Phenomena (recitation and main instructor)
ChEn 3102 - Reaction Kinetics and Reactor Engineering (recitation and main instructor)
ChEn 2001 – Mass and Energy Balances (recitation instructor)

Overall Score from Recent Teaching Evaluations (2014 and 2015):
ChEn 2001: 5.37/6.00; ChEn 3102: 5.05/6.00; ChEn 4502: 5.21/6.00; ChEn 4601: 5.21/6:00