Wei Fan - Curriculum Vitae

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Education and Training

10/2004 - 09/2007 Chemical Engineering, **The University of Tokyo**, Japan
Ph.D. Chemical Engineering
Dissertation Title: "*Crystallization mechanism of aluminosilicate zeolite nanocrystals*"
Advisor: Prof. Tatsuya Okubo

10/2002 - 09/2004 Chemical Engineering, **The University of Tokyo**, Japan
M.S. Chemical Engineering
Advisor: Prof. Tatsuya Okubo

09/1995 - 07/2000 Materials Science and Engineering, **University of Science and Technology of China (USTC)**, P. R. China
B.S. Materials Science and Engineering

Professional Experience

7/2022 - present	**Professor**, Department of Chemical Engineering, University of Massachusetts Amherst, USA
8/2020 - present	**Ed Price Endowed Professor,** Department of Chemical Engineering, University of Massachusetts Amherst, USA
6/2016 - 7/2022	**Associate professor (Tenured),** Department of Chemical Engineering, University of Massachusetts Amherst, USA.
9/2010 - 06/2016	**Assistant professor,** Department of Chemical Engineering, University of Massachusetts Amherst, USA.
9/2011 - present	**Faculty member,** Catalysis Center for Energy Innovation, Energy Frontier Research Center founded by the U.S. Department of Energy
9/2007 - 9/2010	**Postdoctoral researcher,** *Supervisor:* Prof. Michael Tsapatsis, Department of Chemical Engineering and Materials Science, University of Minnesota, USA. Research Project: *Synthesis of zeolite nanocrystals for ultra-thin zeolite membrane*

Awards and Honors

Post-tenure

2021	2021-22 iCons Teaching Fellow
2020	Ed Price Endowed Professor
2019	Invitational Fellowships (Short Term), Japan Society for the Promotion of Science
2018 - 2022	Chutian Scholar Fellowships (Visiting Professor), Hubei Province, China
2016	Barbara H. and Joseph I. Goldstein Outstanding Junior Faculty Award, UMass Amherst
2016	Outstanding College of Engineering Teaching Award, UMass Amherst

Pre-tenure

2014, 2015	Nominated for Distinguished Teaching Award of UMass Amherst
2014 - 2017	3M Non-Tenured Faculty Award
2014 - 2016	Anhui One Hundred Scholar, China (Visiting Scholar)
2011	Keynote Speaker for the Young Investigator Symposium on Japanese Chemical Engineering Society Annual Meeting
2004 - 2007	International Student Fellowship of the University of Tokyo, Japan
2007	Excellent Overseas Chinese Student Award, Ministry of Education of China
2002 - 2004	Panasonic Scholarship, Matsushita Electric Industrial Co., Ltd.
2004	Best Poster Presentation of 2004 Asian Pacific Confederation of Chemical Engineering Congress (APCChE)
2000	Outstanding Graduate of USTC and Anhui Province
1999	"Hu Chunan" Excellent Student of China Scholarship (100 students selected from undergraduate students in China), Ministry of Education of China

International Collaboration Experience

- "Development of catalytic processing for production of aromatics from cofeeding of methanol with Furan" 09/2019 to 08/2022; PI: Prof. Huiyong Chen, Northwest University (China) Consultant: Wei Fan Travelling grant: 100K RMB Visit China once during the project period, and consult the project. No research funding for Fan's research group. Nation Science Foundation of China, No. 21978238;
- "Mechanism of catalytic production of jet fuel from lignocellulosic biomass using base solid Catalysts" 06/2018 to 05/2021; PI: Qi Zhang, Guangzhou Institute of Energy, Chinese Academy of Sciences Consultant: Wei Fan; Travelling grant: 50K RMB Visit China once during the project period, and consult the project. No research funding for Fan's research group. Guangdong Provincial Department of Science and Technology, Ministry of Science and Technology of China, No. 2017YFE0106600

Selective Publications and Creative Activities

Articles in refereed journals (Published, Total number: 110, H-index = 43, Citation: >5500, based on Web of Science, publones.com, 09/03/2021)

https://publons.com/researcher/1243521/wei-fan/publications/

https://scholar.google.com/citations?hl=en&user=ALQRL9wAAAAJ&view_op=list_works

The corresponding author is designated with a *.

Post-tenure

1) Lin, Qing-Fang, Gao, Zihao, Gao, Rei, Lin, Cong, Zhang, Siyao, Chen, Junfeng, Li, Zhiqiang, Liu, Xiaolong, **Fan, Wei**, Li, Jian, Chen, Xiaobo, Camblor, A. Miguel, Chen, Fei-Jian, *A Stable Aluminosilicate Zeolite with Intersecting Three-Dimensional Extra-Large Pores*, **Science**, Accepted.
2) Bores, C.; Luo, S.; Lonergan, J. D.; Richardson, E.; Engstrom, A.; **Fan, W.**; Auerbach, S. M., *Monte Carlo Simulations and Experiments of All-Silica Zeolite LTA Assembly Combining Structure Directing Agents That Match Cage Sizes*. **Phys. Chem. Chem. Phys.** 2021. Accepted. (DOI https://doi.org/10.1039/D1CP03913J)
3) Luo, S.; Wang, T.; Gulbinski, J.; Qi, L.; Tompsett, G.A.; Timko, M.T.; Auerbach, S.M.*; **Fan, W.***, *Identifying Order and Disorder in Double Four-Membered Rings via Raman Spectroscopy during Crystallization of LTA Zeolite*, **Chemistry of Materials**, 2021, 2021, 33, 17, 6794–6803.

4) Xie, S.; Sun, Z.; Liu, T.; Zhang, J.; Li, T.; Ouyang, X.; Qiu, X.; Luo, S.; **Fan, W.**; Lin, H.*, *Beyond biodegradation: Chemical upcycling of poly(lactic acid) plastic waste to methyl lactate catalyzed by quaternary ammonium fluoride*, **Journal of Catalysis**, 2021, 402, 61-71.
5) Liu, Q.; Zhou, L.; Fan, D.; Guan, M.; Ma, Q.; Li, S.; Ouyang, X.*; Qiu, X.*; **Fan, W.***, *Adsorption-Enhanced Glucan Oligomer Production from Cellulose Hydrolysis over Hyper-Cross-Linked Polymer in Molten Salt Hydrate*, **ACS Applied Materials & Interfaces**, 2021.
6) Sabnis, S.; Tanna, V.A.; Gulbinski, J.; Zhu, J.; Nonnenmann, S.S.; Sheng, G.; Lai, Z.; Winter, H.H.; **Fan, W.***, *Exfoliation of surfactant swollen layered MWW zeolites into two-dimensional zeolite nanosheets using telechelic liquid polybutadiene*, **Microporous and Mesoporous Materials**, 2021, 315, 110883.
7) Liu, Q.; Luo, S.; **Fan, W.***; Ouyang, X.; Qiu, X., *Separation of short-chain glucan oligomers from molten salt hydrate and hydrolysis to glucose*, **Green Chemistry**, 2021, 23, 4114-4124.

8) Jain, S.K.; Tabassum, T.; Li, L.; Ren, L.; **Fan, W.**; Tsapatsis, M.; Caratzoulas, S.; Han, S.*; Scott, S.L.*, *P-Site Structural Diversity and Evolution in a Zeosil Catalyst*, **Journal of the American Chemical Society**, 2021, 143, 1968-1983.
9) Zhang, H.; Luo, J.; Qi, M.; Lin, S.; Dong, Q.; Li, H.; Dulock, N.; Povinelli, C.; Wong, N.; **Fan, W.**; Bao, J.L.; Wang, D.*, *Enabling Lithium Metal Anode in Nonflammable Phosphate Electrolyte with Electrochemically Induced Chemical Reactions*, **Angewandte Chemie International Edition**, 2021, 60, 19183-19190.
10) Liu, Q.; **Fan, W.***, *Recent Advances in the Synthesis of Mesoporous Zeolites by Post-synthetic Method，Supramolecular Self-assembly and Mesopore Generation Agent*, **Chemical Journal of Chinese Universities**, 2021, 42, 60-73. (Invited Review)
11) Gulbinski, J.; Ren, L.; Vattipalli, V.; Chen, H.; Delaney, J.; Bai, P.; Dauenhauer, P.; Tsapatsis, M.; Abdelrahman, O.A.; **Fan, W.***, *Role of Silica Support in Phosphoric Acid Catalyzed Production of p-Xylene from 2,5-Dimethylfuran and Ethylene*, **Industrial & Engineering Chemistry Research**, 2020, 59, 22049-22056.
12) Fei, H.-F.; Long, Y.; Yu, H.-J.; Yavitt, B.M.; **Fan, W.;** Ribbe, A. Watkins, J.J.*, *Bimodal Mesoporous Carbon Spheres with Small and Ultra-Large Pores Fabricated Using Amphiphilic Brush Block Copolymer Micelle Templates*, **ACS Applied Materials & Interfaces**, 2020, 12, 57322-57329.
13) Zhou, J.; **Fan, W.**; Wang, Y.; Xie, Z.*, *The Essential Mass Transfer Step in Hierarchical/nano Zeolite: Surface Diffusion*, **National Science Review**, 2019, 7, 1630-1632.
14) Fei, H.-F.; Li, W.; Nuguri, S.; Yu, H.-J.; Yavitt, B.M.; **Fan, W.**; Watkins, J.J.*, *One-Step Synthesis of Hierarchical, Bimodal Nanoporous Carbons via Co-templating with Bottlebrush and Linear Block Copolymers*, **Chemistry of Materials**, 2020, 32, 6055-6061.
15) **Front Cover**, Wang, T.; Luo, S.; Tompsett, G. A.; Timko, M. T.; **Fan, W.***; Auerbach, S. M.*, *Critical Role of Tricyclic Bridges Including Neighboring Rings for Understanding Raman Spectra of Zeolites*. **Journal of the American Chemical Society**, 2019, *141* (51), 20318-20324.
The manuscirpt is highlighted on public media inlcuding Eurekalert, Nanowerk, Phys.org, Science Daily, Chemeurope
16) Li, S.; Yan, L.; Liu, Q.; Liu, J.; Liu, Q.; **Fan, W.***; Zhao, X.; Zhang, X.; Wang, C.; Ma, L. Zhang, Q., *One-pot hydrodeoxygenation of biomass furan derivatives into decane under mild conditions over Pd/C combined with phosphotungstic acid*, **Green Chemistry**, 2020, 22, 2889-2900.
One of the most read Green Chemistry articles 2020 May.

17) Liu, Q.; Ma, Q.; Sabnis, S.; Zheng, W.; Vlachos, D.G.; **Fan, W.***; Li, W.*; Ma, L.*, *Production of High-Yield Short-Chain Oligomers from Cellulose via Selective Hydrolysis in Molten Salt Hydrates and Separation*, **Green Chemistry**, 2019, 21, 5030-5038.
18) Qi, X.; Vattipalli, V.; Zhang, K.; Bai, P.; Dauenhauer, P.J.; **Fan, W.***, *Adsorptive Nature of Surface Barriers in MFI Nanocrystals*, **Langmuir**, 2019, 35, 12407-12417.
19) Li, W.*; Su, M.; Zhang, T.; Ma, Q.; **Fan, W.***, *Production of liquid fuel intermediates from furfural via aldol condensation over potassium-promoted Sn-MFI catalyst*, **Fuel**, 2019, 237, 1281-1290.
20) Cho, H.J.; Gould, N.S.; Vattipalli, V.; Sabnis, S.; Chaikittisilp, W.; Okubo, T.; Xu, B.; **Fan, W.***, *Fabrication of hierarchical Lewis acid Sn-BEA with tunable hydrophobicity for cellulosic sugar isomerization*, **Microporous and Mesoporous Materials**, 2019, 278, 387-396.
21) Qi, X.; **Fan, W.***, *Selective Production of Aromatics by Catalytic Fast Pyrolysis of Furan with In Situ Dehydrogenation of Propane*, **ACS Catalysis**, 2019, 9, 2626-2632.
22) Lacey, S.D.; Dong, Q.; Huang, Z.; Luo, J.; Xie, H.; Lin, Z.; Kirsch, D.J.; Vattipalli, V.; Povinelli, C.; **Fan, W.**; Shahbazian-Yassar, R.; Wang, D.; Hu, L.*, *Stable Multimetallic Nanoparticles for Oxygen Electrocatalysis*, **Nano Letters**, 2019, 19, 5149-5158
23) **Front Cover,** Vattipalli, V.; Paracha, A.M.; Hu, W.G.; Chen, H.Y.; **Fan, W.***, *Broadening the Scope for Fluoride-Free Synthesis of Siliceous Zeolites*, **Angewandte Chemie-International Edition**, 2018, 57, 3607-3611.
24) Qi, X.D.; Vattipalli, V.; Dauenhauer, P.J.; **Fan, W.***, *Silica Nanoparticle Mass Transfer Fins for MFI Composite Materials*, **Chemistry of Materials**, 2018, 30, 2353-2361.
25) Ponnuru, K.; Manayil, J.C.; Cho, H.J.; Osatiashtiani, A.; **Fan, W.**; Wilson, K.; Jentoft, F.C.*, *Tuning solid catalysts to control regioselectivity in cross aldol condensations with unsymmetrical ketones for biomass conversion*, **Molecular Catalysis**, 2018, 458, 247-260.
26) Ponnuru, K.; Manayil, J.C.; Cho, H.J.; **Fan, W.**; Wilson, K.; Jentoft, F.C.*, *Intraparticle Diffusional versus Site Effects on Reaction Pathways in Liquid-Phase Cross Aldol Reactions*, **Chemphyschem**, 2018, 19, 386-401.
27) Jeon, M.Y.; Kim, D.; Kumar, P.; Lee, P.S.; Rangnekar, N.; Bai, P.; Shete, M.; Elyassi, B.; Lee, H.S.; Narasimharao, K.; Basahel, S.N.; Al-Thabaiti, S.; Xu, W.Q.; Cho, H.J.; Fetisov, E.O.; Thyagarajan, R.; DeJaco, R.F.; **Fan, W.**; Mkhoyan, K.A.; Siepmann, J.I.; Tsapatsis, M.*, *Ultra-selective high-flux membranes from directly synthesized zeolite nanosheets*, **Nature**, 2017, 543, 690-694.
28) Luo, J.; Yao, X.; Yang, L.; Han, Y.; Chen, L.; Geng, X.; Vattipalli, V.; Dong, Q.; **Fan, W.**; Wang, D.*; Zhu, H.*, *Free-standing porous carbon electrodes derived from wood for high-performance Li-O2 battery applications*, **Nano Research**, 2017, 10, 4318-4326.
29) Wang, J.; Tang, L.; Somasundaran, P.; **Fan, W.**; Zeng, G.; Deng, Y.; Zhou, Y.; Wang, J.; Shen, Y.*, *Highly effective antibacterial activity by the synergistic effect of three dimensional ordered mesoporous carbon-lysozyme composite*, **Journal of Colloid and Interface Science**, 2017, 503, 131-141.
30) Wang, X.; Min, S.; Das, S.K.; **Fan, W.**; Huang, K.-W.; Lai, Z.*, *Spatially isolated palladium in porous organic polymers by direct knitting for versatile organic transformations*, **Journal of Catalysis**, 2017, 355, 101-109.
31) Gou, J.; Wang, Z.; Li, C.; Qi, X.; Vattipalli, V.; Cheng, Y.-T.; Huber, G.; Conner, W.C.; Dauenhauer, P.J.; Mountziaris, T.J.; **Fan, W.***, *The effects of ZSM-5 mesoporosity and morphology on the catalytic fast pyrolysis of furan,* **Green Chemistry***, 2017, 19, 3549-3557.*
One of the most read Green Chemistry articles 2017 July.

32) Patet, R.E.; **Fan, W.;** Vlachos, D.G.; Caratzoulas, S.*, *Tandem Diels-Alder Reaction of Dimethylfuran and Ethylene and Dehydration to para-Xylene Catalyzed by Zeotypic Lewis Acids*, **ChemCatChem**, 2017, 9, 2523-2535.

33) Zhang, T.W.; **Fan, W.**; Li, W.Z.; Xu, Z.P.; Xin, H.S.; Su, M.X.; Lu, Y.J.; Ma, L.L.*, *One-Pot Conversion of Carbohydrates into 5-(Hydroxymethyl)furfural using Heterogeneous Lewis-Acid and Bronsted-Acid Catalysts*, **Energy Technology**, 2017, 5, 747-755.

34) Abdelrahman, O.A.; Park, D.S.; Vinter, K.P.; Spanjers, C.S.; Ren, L.; Cho, H.J.; Vlachos, D.G.; **Fan, W.**; Tsapatsis, M.; Dauenhauer, P.J.*, *Biomass-Derived Butadiene by Dehydra-Decyclization of Tetrahydrofuran*, **ACS Sustainable Chemistry & Engineering**, 2017, 5, 3732-3736.

35) Abdelrahman, O.A.; Park, D.S.; Vinter, K.P.; Spanjers, C.S.; Ren, L.; Cho, H.J.; Zhang, K.; **Fan, W.**; Tsapatsis, M.; Dauenhauer, P.J.*, *Renewable Isoprene by Sequential Hydrogenation of Itaconic Acid and Dehydra-Decyclization of 3-Methyl-Tetrahydrofuran*, **ACS Catalysis**, 2017, 7, 1428-1431.

36) Cho, H.J.; Ren, L.; Vattipalli, V.; Yeh, Y.-H.; Gould, N.G.; Xu, B.; Gorte, R.J.; Lobo, R.; Dauenhauer, P.J. Tsapatsis, M., **Fan, W***, *Renewable p-Xylene from 2,5-Dimethylfuran and Ethylene Using Phosphorus-containing Zeolite Catalysts*, **ChemCatChem**, 2017, 9, 398-402.

37) Vattipalli, V.; Qi, X.; Dauenhauer, P.J. **Fan, W.***, *Long Walks in Hierarchical Porous Materials due to Combined Surface and Configurational Diffusion*, **Chemistry of Materials**, 2016, 28, 7852-7863.

38) Park, D.S.; Joseph, K.E.; Koehle, M.; Krumm, C.; Ren, L.; Damen, J.N.; Shete, M.H.; Lee, H.S.; Zuo, X.; Lee, B.; **Fan, W.**; Vlachos, D.G.; Lobo, R.F.; Tsapatsis, M.; Dauenhauer, P.J.*, *Tunable Oleo-Furan Surfactants by Acylation of Renewable Furans*, **ACS Central Science**, 2016, 2, 820-824.

39) Dornath, P.; Ruzycky, S.; Pang, S.; He, L.; Dauenhauer, P.; **Fan, W.***, *Adsorption-enhanced hydrolysis of glucan oligomers into glucose over sulfonated three-dimensionally ordered mesoporous carbon catalysts*, **Green Chemistry**, 2016, 18, 6637-6647.

Pre-tenure

40) Gamliel, D.P.; Cho, H.J.; **Fan, W.**; Valla, J.A.*, *On the effectiveness of tailored mesoporous MFI zeolites for biomass catalytic fast pyrolysis*, **Applied Catalysis A: General**, 2016, 522, 109-119.

41) Williams, C.L.; Vinter, K.P.; Chang, C.-C.; Xiong, R.; Green, S.K.; Sandler, S.I.; Vlachos, D.G.; **Fan, W.**; Dauenhauer, P.J.*, *Kinetic regimes in the tandem reactions of H-BEA catalyzed formation of p-xylene from dimethylfuran*, **Catalysis Science & Technology**, 2016, 6, 178-187.

42) Williams, C.L.; Vinter, K.P.; Patet, R.E.; Chang, C.-C.; Nikbin, N.; Feng, S.; Wiatrowski, M.R.; Caratzoulas, S.; **Fan, W.**; Vlachos, D.G.; Dauenhauer, P.J.*, *Inhibition of Xylene Isomerization in the Production of Renewable Aromatic Chemicals from Biomass-Derived Furans*, **ACS Catalysis**, 2016, 6, 2076-2088.

43) Yu, J.; Luo, J.; Zhang, Y.; Cao, J.; Chang, C.-C.; Gorte, R.J.;* **Fan, W.**, *An examination of alkali-exchanged BEA zeolites as possible Lewis-acid catalysts*, **Microporous and Mesoporous Materials**, 2016, 225, 472-481.

44) Rieger, K.; Cho, H.J.; Yeung, H. F.; **Fan, W.;** Schiffman, J.*, *Antibacterial Activity of Silver Ion Release from Zeolites Immobilized on Cellulose Nanofiber Mats;* **ACS Applied Materials & Interfaces**, 2016, 8 (5), 3032-3040.

45) Chang, C.-C.; Je Cho, H.; Yu, J.; Gorte, R.J.; Gulbinski, J.; Dauenhauer, P.; **Fan, W.***, *Lewis acid zeolites for tandem Diels-Alder cycloaddition and dehydration of biomass-derived dimethylfuran and ethylene to renewable p-xylene*, **Green Chemistry**, 2016, 18, 1368-1376.

46) Green, S.K.; Patet, R.E.; Nikbin, N.; Williams, C.L.; Chang, C.-C.; Yu, J.; Gorte, R.J.; Caratzoulas, S.; **Fan, W.**; Vlachos, D.G.; Dauenhauer, P.J.*, *Diels-Alder cycloaddition of 2-methylfuran and ethylene for*

renewable toluene, **Applied Catalysis B: Environmental**, *2016*, 180, 487-496.

47) Xie, J.; Yao, X.H.; Cheng, Q.M.; Madden, I.P.; Dornath, P.; Chang, C.C.; **Fan, W.*;** Wang, D.W.*, *Three Dimensionally Ordered Mesoporous Carbon as a Stable, High-Performance Li-O-2 Battery Cathode*, **Angewandte Chemie-International Edition**, *2015*, 54, 4299-4303.

48) Xie, J.; Dong, Q.; Madden, I.; Yao, X.H.; Cheng, Q.M.; Dornath, P.; **Fan, W.;** Wang, D.W.*, *Achieving Low Overpotential Li-O_2 Battery Operations by Li_2O_2 Decomposition through One-Electron Processes*; **Nano Letter**, 2015, 15(12), 8371-8376.

49) Chang, C.-C.; Cho, H.J.; Wang, Z.; Wang, X.; **Fan, W.***, *Fluoride-free synthesis of a Sn-BEA catalyst by dry gel conversion*, **Green Chemistry**, *2015*, 17, 2943-2951.

50) Teixeira, A.R.; Qi, X.D.; Conner, W.C.; Mountziaris, T.J.; **Fan, W.** Dauenhauer, P.J.*, *2D Surface Structures in Small Zeolite MFI Crystals*, **Chemistry of Materials**, *2015*, 27, 4650-4660.

51) Teixeira, A.R.; Krumm, C.; Vinter, K.P.; Paulsen, A.D.; Zhu, C.; Maduskar, S.; Joseph, K.E.; Greco, K.; Stelatto, M.; Davis, E.; Vincent, B.; Hermann, R.; Suszynski, W.; Schmidt, L.D.; **Fan, W.**; Rothstein, J.P. Dauenhauer, P.J.*, *Reactive Liftoff of Crystalline Cellulose Particles*, **Scientific Reports**, *2015*, 5, 6.

52) Courtney, T.D.; Chang, C.-C.; Gorte, R.J.; Lobo, R.F.; **Fan, W.**; Nikolakis, V.*, *Effect of water treatment on Sn-BEA zeolite: Origin of 960 cm^{-1} FTIR peak*, **Microporous and Mesoporous Materials**, *2015*, 210, 69-76.

53) Patet, R.E.; Nikbin, N.; Williams, C.L.; Green, S.K.; Chang, C.-C.; **Fan, W.**; Caratzoulas, S.*; Dauenhauer, P.J.*; Vlachos, D.G.*, *Kinetic Regime Change in the Tandem Dehydrative Aromatization of Furan Diels–Alder Products*, **ACS Catalysis**, *2015*, 2367-2375.

54) Auerbach, S.M.; **Fan, W.;** Monson, P.A.*, *Modelling the assembly of nanoporous silica materials*, **International Reviews in Physical Chemistry**, *2015*, 34, 35-70.

55) **Front Cover.** Dornath, P.; Cho, H.J.; Paulsen, A.; Dauenhauer, P.J.; **Fan, W.***, *Efficient mechano-catalytic depolymerization of crystalline cellulose by formation of branched glucan chains*, **Green Chemistry**, *2015*, 17, 769-775.

56) Wang, Z.; Li, C.; Cho, H.J.; Kung, S.-C.; Snyder, M.A.; **Fan, W.***, *Direct, single-step synthesis of hierarchical zeolites without secondary templating*, **Journal of Materials Chemistry A**, *2015*, 3, 1298-1305.

57) Maduskar, S.; Teixeira, A.R.; Paulsen, A.D.; Krumm, C.; Mountziaris, T.J.; **Fan, W.;** Dauenhauer, P.J.*, *Quantitative carbon detector (QCD) for calibration-free, high-resolution characterization of complex mixtures*, **Lab on a Chip**, *2015*, 15, 440-447.

58) Teixeira, A. R.; Qi, X.; Chang, C.-C.; **Fan, W.**; Conner, W. C.; Dauenhauer, P. J.*, *On Asymmetric Surface Barriers in MFI Zeolites Revealed by Frequency Response.* **The Journal of Physical Chemistry C,** *2014*, 118 (38), 22166-22180.

59) Kung, S.-C.; Chang, C.-C.; **Fan, W.**; Snyder, M. A.*, *Template-Free Ordered Mesoporous Silicas by Binary Nanoparticle Assembly*. **Langmuir**, *2014*, 30 (39), 11802-11811.

60) Pan, Z.; Stemmler, E. A.; Cho, H. J.; **Fan, W.**; LeBlanc, L. A.; Patterson, H. H.; Amirbahman, A.*, *Photocatalytic degradation of 17α-ethinylestradiol (EE2) in the presence of TiO_2-doped zeolite,* **Journal of Hazardous Materials,** *2014*, 279 (0), 17-25.

61) **Front Cover.** Cho, H. J.; Chang, C.-C.; **Fan, W.***, *Base free, one-pot synthesis of lactic acid from glycerol using a bifunctional Pt/Sn-MFI catalyst,* **Green Chemistry,** *2014*, 16, 3428-3433.

62) Cho, H. J.; Dornath, P.; **Fan, W.***, *Synthesis of Hierarchical Sn-MFI as Lewis Acid Catalysts for Isomerization of Cellulosic Sugars,* **ACS Catalysis,** *2014*, 4, 2029-2037.

63) Chen, S. S.; Rotaru, A. E.; Shrestha, P. M.; Malvankar, N. S.; Liu, F. H.; **Fan, W.**; Nevin, K. P.; Lovley, D. R.*, *Promoting Interspecies Electron Transfer with Biochar*. **Scientific Reports,** *2014***,** 4, 7.

64) Rajabbeigi, N.; Torres, A. I.; Lew, C. M.; Elyassi, B.; Ren, L.; Wang, Z.; Je Cho, H.; **Fan, W.**; Daoutidis, P.; Tsapatsis, M.*, *On the kinetics of the isomerization of glucose to fructose using Sn-Beta.* **Chemical Engineering Science,** *2014***,** 116, 235-242.

65) Dornath, P.; **Fan, W.*,** *Dehydration of Fructose into Furans over Zeolite Catalyst using Carbon Black as Adsorbent,* **Microporous and Mesoporous Materials,** *2014*, 191, 10-17.

66) Teixeira, R. A.; Chang, C,-C.; **Fan, W.*;** Dauenhauer, P. J.*, *Dominance of Surface Barriers in Molecular Transport through Silicalite-1,* **The Journal of Physical Chemistry C,** *2013*, 117 (48), 25545-25555.

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70) Wang, Z.; Dornath, P.; Chang, C.-C.; Chen, H.; **Fan, W.***, *Confined synthesis of three-dimensionally ordered mesoporous-imprinted zeolites with tunable morphology and Si/Al ratio.* **Microporous Mesoporous Materials,** *2013,* 181*,* 8-16.
One of the most downloaded Microporous Mesoporous Materials articles 2013 July.

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76) Williams, C.L.; Chang, C.-C.; Do, P.; Nikbin, N.; Caratzoulas, S.; Vlachos, D.G.; Lobo, R.F.; **Fan, W.;** Dauenhauer, P.J.* *Cycloaddition of Biomass-Derived Furans for Catalytic Production of Renewable p-Xylene*, **ACS Catalysis**, *2012,* 2, 935-939.

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79) Chen, H.; Wydra J.; Zhang, X.Y.; Lee, S. P.; Wang, Z,; **Fan, W.*;** Tsapatsis, M*. *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*. **Journal of the American Chemical Society**, *2011,* 133, 12390-12393.
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Before Joining UMass

82) Tsapatsis, M.*; **Fan, W.**, *A New, Yet Familiar, Lamellar Zeolite*, **Chemcatchem**, *2010,* 2, 246-248.
83) Atchison, N.A.; **Fan, W.**; Papas, K.K.; Hering, B.J.; Tsapatsis, M.; Kokkoli, E.*, *Binding of the Fibronectin-Mimetic Peptide, PR_b, to alpha(5)beta(1) on Pig Islet Cells Increases Fibronectin Production and Facilitates Internalization of PR_b Functionalized Liposomes*, **Langmuir**, *2010,* 26, 14081-14088.
84) Wang, Z.P.; Snyder, M.A.*; **Fan, W.**; Tsapatsis, M.*, *Hollow cubic silica shells and assembled porous coatings*, **Scripta Materialia**, *2010,* 62, 504-507.
85) Wakihara, T.; Suzuki, Y.; **Fan, W.**; Saito, S.; Kohara, S.; Sankar, G.; Sanchez-Sanchez, M.; Ogura, M.; Okubo, T.*; *Changes in the medium-range order during crystallization of aluminosilicate zeolites characterized by high-energy X-ray diffraction technique*. **Journal of the Ceramic Society of Japan**, *2009*, 117, 277-282.
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88) Yokoi, T.; Wakabayashi, J.; Otsuka, Y.; **Fan, W.**; Iwama, M.; Watanabe, R.; Aramaki, K.; Shimojima, A.; Tatsumi, T.; Okubo, T.* *Mechanism of Formation of Uniform-Sized Silica Nanospheres Catalyzed by Basic Amino Acids.* **Chemistry of Materials,** *2009*, 21, 3719-3729.
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91) **Fan, W.**; Morozumi, K.; Kimura, R.; Yokoi, T.; Okubo, T.* *Synthesis of nanometer-sized sodalite without adding organic additives*. **Langmuir**, *2008,* 24, 6952-6958.
92) Wakihara, T.; **Fan, W.**; Kohara, S.; Ogura, M.; Sankar, G.; Okubo, T.* *Intermediate-range order in mesoporous silicas investigated by a high-energy X-ray diffraction technique*. **Chemistry Letters**, *2008,* 37, 30-31.
93) Gu, J.; **Fan, W.**; Shimojima, A.; Okubo, T.* *Microwave-induced synthesis of highly dispersed gold*

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94) Sankar, G.*; Okubo, T.; **Fan, W.**; Meneau, F. *New insights into the formation of microporous materials by in situ scattering techniques*. **Faraday Discussions,** *2007,* 136, 157-166.

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109) Xu, Y.; **Fan, W.**; Chino, N.; Uehara, K.; Hikichi, S.; Mizuno, N.; Ogura, M.; Okubo, T. * *The*

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Book Chapters

Mesoporous Zeolites: Preparation, Characterization and Applications, Editor(s): Javier García-Martínez, Kunhao Li,

CHAPTER 7. Nanofabrication of Hierarchical Zeolites in Confined Space, 2015 (Pages: 227-258), Wang, Z. Fan, W., DOI: 10.1002/9783527673957.ch7

Patents and Patent Applications

1. Winter, Horst H.; **Fan, W**.; Tanna, V.; Sabnis S.; *Exfoliation of zeolites in functionalized polymers, Patent No.: US10793442B2,* Granted on 2020/10/09
2. Chang, C.-C.; Wang, Z.; Dornath, P.; Cho, H.J.; **Fan, W.;** *Rapid synthesis of beta zeolites*, Patent No.: U.S. 9,108,190 B1, Granted on 2015/8/8
3. Cho, H. J.; **Fan, W.**; Tsapatsis, M.; Dauenhauer, P.; Ren, L.; Lobo, R.; *Phosphorus-containing solid catalysts and reactions catalyzed thereby, including synthesis of p-xylene,* US20190344252A1, Filled on 2017/9/29
4. Cheng, Y,-T.; Wang, Z.; **Fan, W.;** Huber, W. G. *Selective production of p-xylene by catalytic fast pyrolysis of biomass*, U.S. Provisional Patent Application Serial No. 61/655,605
5. Williams, C.L.; Chang, C.-C.; Vlachos, D.G.; Lobo, R.F.; **Fan, W.;** Dauenhauer, P.J. *Production of para-xylene by catalytically reacting 2,5-dimethylfuran and ethylene in a solvent*, U.S. Provisional Patent Application Serial No. 61/807,099.
6. Paul, Dornath; Dauenhauer, P.J.; **Fan, W.;** *Improved production of water-soluble oligomers*, U.S. Provisional Patent Application Serial No. 62/152,107

Presentations - Invited/Keynote

Post-tenure

(1) Invited - **Wei Fan**, *Broadening the Scope for Synthesis of Siliceous Zeolites and Their Crystallization Process*, Symposium: Porous Materials: Synthesis, Characterization, and Utilization, International Chemical Congress of Pacific Basin Societies (Pacifichem 2020), 12/16/2021

(2) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for Chemicals Conversion*, University of Maryland, Department of Chemical and Biomolecular Engineering, TBD, 2021 Fall

(3) Invited - **Wei Fan**, *Development of Zeolite Catalysts for Production of Renewable Chemicals*, University of Missouri, Department of Biomedical, Biological, and Chemical Engineering, 08/24/2021

(4) Invited - **Wei Fan**, *Development of Zeolite Catalysts for Production of Aromatics from Lignocellulosic Biomass*, UMass Amherst Chemistry Department, Amherst, MA, 12/12/2019

(5) Invited - **Wei Fan***, Expanding the Scope of Fluoride-free Siliceous Zeolite Syntheses,* The 20th Chinese Zeolite Conference, Hangzhou, China, 10/25/2019

(6) Invited - **Wei Fan**, *Investigation of Surface Barrier During Molecular Transport in Hierarchical Zeolites,* Shanghai Petrochemical, Shanghai, China 10/25/2019

(7) Invited - **Wei Fan***, Development of hierarchical zeolites with enhanced mass transport for bulky chemical conversion,* Nanotech 2019 Conference and Expo, Boston, MA, 6/18/2019

(8) Invited - **Wei Fan***, Development of P containing zeolite catalysts for production of aromatics from lignocellulosic biomass,* Hokkaido University, Hokkaido, Japan, 05/23/2019

(9) Invited - **Wei Fan***, Development of P containing zeolite catalysts for production of aromatics from lignocellulosic biomass,* Tokyo Institute of Technology, Yokohama, Japan, 05/09/2019

(10) Invited - **Wei Fan***, Development of P containing zeolite catalysts for production of aromatics from lignocellulosic biomass,* Yokohama National University*,* Yokohama, Japan, 04/25/2019

(11) Invited - **Wei Fan***, Development of P containing zeolite catalysts for production of aromatics from lignocellulosic biomass,* Japan Society for the Promotion of Science (JSPS), The 13th meeting of Frontier Research and Development Committees, Tokyo, Japan, 04/08/2019

(12) Invited - **Wei Fan***, Unexpected Long Walks in Hierarchical Porous Materials with Combined Surface and Configurational Diffusion,* APS March Meeting, Advances in Hierarchical Systems: Theory and Experiments, Boston, MA, 03/06/2019

(13) Invited - Wei Fan, *Production of Renewable p-Xylene from 2, 5-Dimethylfuran and Ethylene*, UMass Lowell, Chemical Engineering Department, 11/8/2018,

(14) Invited - **Wei Fan***, Broadening the Scope for Siliceous Zeolites Synthesis Using Dry Gel Conversion,* North-East Corridor Zeolite Association, University of Pennsylvania, 12/14/2018

(15) Keynote - Wei Fan, *Unexpected Long Walks in Hierarchical Porous Materials with Combined Surface and Configurational Diffusion*, International Symposium on Mesoporous Zeolites, Boston, 08/22/2018

(16) Invited - Wei Fan, *Production of Renewable p-Xylene from 2, 5-Dimethylfuran and Ethylene*, Guangzhou Institute of Energy Conversion Chinese Academy of Sciences, Guangzhou, China, 07/23/2018

(17) *Invited - Wei Fan, Production of Renewable p-Xylene from 2, 5-Dimethylfuran and Ethylene,* King Abdullah University of Science and Technology, Thuwal, Saudi Arabia, 11/01/2017

(18) Invited - Wei Fan, Investigation of Enhanced Mass Transport and Surface Barrier in Hierarchical Zeolites, 9th Sino-US Joint Conference of Chemical Engineering (SUCE 2017), Beijing, China 10/15/2017

(19) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for Production of Renewable Chemicals,* University of Villanova, Villanova, PA, 12/08/2016

(20) Invited - **Wei Fan**, *Mass transport in Hierarchical Porous Materials due to Combined Surface and Configurational Diffusion,* Shanghai Petrochemical, Shanghai, China 11/02/2016

(21) Invited - **Wei Fan**, *Ultra-selective production of renewable p-Xylene from dimethylfuran*, The International Symposium on Energy Chemistry & Materials (ISECM), University of Science and Technology of China, Hefei, China 10/29/2016

(22) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts with Enhanced Mass Transport for Bulky Molecule Reactions*, MRS, OnDemand, Webinar Series 10/05/2016

Pre-tenure

(23) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for Production of Renewable Chemicals,* NYCS Spring Annual Spring Symposium, Rutgers University, NJ, 03/23/2016

(24) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for the Production of Renewable Chemicals, Chemical Engineering Department,* University of Massachusetts Amherst, MA, 01/26/2016

(25) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for the Production of Renewable Chemicals,* South China University of Technology, Guangzhou, China 12/18/2015

(26) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Materials for Ultra-Fast Gas Separation,* King Abdullah University of Science & Technology, Saudi Arabia, 09/07/2015

(27) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts with Enhanced Mass Transport for Bulky*

Molecule Reactions, Gordon Research Conference, Nanoporous Materials & Their Applications, Holderness School, NH, 08/13/2015

(28) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for Production of Renewable Chemicals*, University of Tokyo, Japan, 07/03/2015

(29) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for Production of Renewable Chemicals,* Philadelphia Catalysis Club*,* Philadelphia, PA, 05/07/2015

(30) Invited - **Wei Fan**, *One-step Synthesis of Hierarchical ZSM-5 without Using Secondary Template and Their Mass Transport and Catalytic Properties*, W.R. Grace, Columbia, MD, 01/07/2015

(31) Invited - **Wei Fan**, *Base Free, One-pot Synthesis of Lactic Acid from Glycerol Using a Bifunctional Pt/Sn-MFI catalyst*, Frontiers in Biorefining 2014, St. Simons Island, GA, 10/22/2014

(32) Invited - **Wei Fan**, *Development of Hierarchical Zeolite Catalysts for Bulky Molecule Reactions*, Chemistry Department, Boston College, Boston, MA, 10/02/2014

(33) Invited - **Wei Fan**, *Silica Nanoparticle Coatings by Adsorption from Lysine Silica Nanoparticle Sols on Inorganic and Biological Surface*, 3M, St. Paul, MA, 6/11/2014

(34) Invited - **Wei Fan**, *Advances in Zeolite Catalysis and Synthesis*, 247th ACS meeting, Dallas, TX, 03/17/2014

(35) Invited - **Wei Fan**, *One-step Synthesis of Hierarchical ZSM-5 without Using Secondary Template and Their Mass Transport Properties*, Chevron company, Richmond , CA, 11/05/2013

(36) Invited - **Wei Fan,** *Silica Nanoparticle Coatings by Adsorption from Lysine Silica Nanoparticle Sols on Inorganic and Biological Surface*, Gansu Chinese Medical School, Lanzhou, China, 05/20/2013

(37) Invited - **Wei Fan**, *Rapid Synthesis of Sn-Beta and Their Application in Biomass Conversion*, Nippon Chemical Industries, Japan, 01/16/2013

(38) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, University of Tokyo, Japan, 01/15/2013

(39) Invited - **Wei Fan**, *Hierarchical Microporous Materials: Rational and Designable Heterogeneous Catalysts for Renewable Energy*, Nanjing University, Nanjing, China, 01/09/2013

(40) Invited - **Wei Fan**, *Hierarchical Microporous Materials: Rational and Designable Heterogeneous Catalysts for Renewable Energy*, University of Science and Technology of China, Hefei, China, 01/10/2013

(41) Invited - **Wei Fan**, *Investigation of Crystallization Mechanism of Zeolites using Small Angle X-ray Scattering*, Small Angle X-ray Scattering Master Class, University of Minnesota, Minneapolis, 05/01/2012

(42) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, Materials Chemistry Division, VIT, India, 09/06/2012

(43) Keynote - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, Keynotes on Asian International Symposium, 92nd Annual Meeting of The Chemical Society of Japan, Tokyo, Japan, 03/27/2012

(44) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, University of Florida, Chemical Engineering Department, 03/19/2012

(45) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, TMS Annual Meeting, Orlando, FL, 03/15/2012

(46) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, Chemical Engineering, Worcester Polytechnic Institute, MA, 2/29/2012

(47) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-Imprinted Structure*, Chemistry Department, University of Maine, ME, 2/17/2012

(48) Invited - **Wei Fan**, *Hydrothermal Synthesis of Zeolites with Three-Dimensionally Ordered Mesoporous-*

Imprinted Structure, Chemistry Department, University of New Hampshire, NH, 12/07/2011

Competitively Awarded Research Grants

Post-tenure

- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  PI: Wei Fan,
  - Title: "*Development of Phosphorus Containing Zeolite Catalysts for Biomass Conversion*",
    Funding: $321,000, Period: August 2018 - September 2022
- **Department of Energy,** Basic Energy Sciences
  PI: Scott Auerbach; CO-PI: Wei Fan,
  - Title: "*Integrated Synthesis and Modeling Study on the Roles of Heteroatoms and Structure-Directing Agents in Zeolite Formation*",
    Funding: $630,000, (50% Fan) Period: August 2018 – August 2022
- **Sinopec Shanghai Petroleum Chemical Engineering Research Institute**
  PI: Wei Fan
  - Title: "Fundamental Understanding of Mass Transport in Hierarchical Zeolites",
    Funding: $210,000, Period: August 2021 – August 2024
- **Nanoblue Inc China,**
  - Title: "*Development of Zeolite Catalysts in Diesel Engine Emission Control*",
    Funding: $200,000, Period: December 2021 - August 2023
    PI: Wei Fan
- **ACS PRF**
  PI: Friederike C. Jentoft; CO-PI: Wei Fan
  - Title: "*Identification and Design of Sites for Methane Conversion to Higher Alkanes under Mild Conditions*",
    Funding: $110,000, Period: August 2018 – August 2020
- **ACS PRF**
  PI: Henning H. Winter ; CO-PI: Wei Fan
  - Title: "Fabrication of Two-dimensional zeolite nanosheets using telechelic liquid polybutadiene",
    Funding: $110,000, Period: August 2017 – August 2019
- **National Science Foundation**
  PI: Kevin Kittilstved, Co-PI: Dhandapani Venkataraman, Wei Fan, Friederike Jentoft
  - Title: "MRI: Acquisition of a modern powder X-ray diffractometer with in-situ capabilities",
    Funding: $ 259,528, Period: August 2017 - August 2020
- **National Science Foundation**
  PI: Kevin Kittilstved, Co-PI: Dhandapani Venkataraman, Wei Fan, Friederike Jentoft
  - Title: "S-STEM Overcoming Barriers for Transfer Students in the Engineering Pipeline",
    Funding: $ 632,369, Period: August 2015 - August 2021
- **Nation Science Foundation of China** 100,000 RMB 09/2019 – 08/2022

"Development of catalytic processing for production of aromatics from cofeeding of methanol with Furan" (PI: Huiyong Chen, Northwest University (China); Consultant: Wei Fan UMass Amherst)

100K RMB is for travelling grant. Visit China once during the project period, and consult the project. No research funding for Fan's research group.

- **Ministry of Science and Technology of China** 50,000 RMB 06/2018 – 05/2021

"Mechanism of catalytic production of jet fuel from lignocellulosic biomass using base solid Catalysts" (PI: Qi Zhang, Guangzhou Institute of Energy (China), Chinese Academy of Sciences Consultant: Wei Fan UMass Amherst)

50 K RMB is for travelling grant. Visit China once during the project period, and consult the project. No research funding for Fan's research group.

Pre-tenure

- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  PI: Wei Fan, Co-PI: Friederike Jentoft
  - Title: "*Selective Hydrolysis of Cellulose into Glucose*",
    Funding: $220,000, Period: August 2014 - September 2018. PI: Wei Fan
  - Title: "*Development of Bifunctional Zeolite Catalyst for Production of Aromatics from Biomass*",
    Funding: $220,000, Period: August 2014 - September 2018. PI: Wei Fan
- **University of Massachusetts Amherst,** International Program Office
  - Title: "*Advance Internationalization of UMass Education and Research in Materials Science*"
    Funding: $4000, Period: September 2015 – September 2016
    PI: Wei Fan
- **Reliance Inc**.
  - Title: "*Cotton Stalk/Straw Bio-Crude for Renewable Biofuels and BTX from Biomass*"
    Funding: $75,000 (80% Fan), Period: September 2014 - August 2015
    PI: Wei Fan, Co-PI: Triantafillos J. Mountziaris and Curt Conner
- **National Science Foundation, CBET,**
  - Title: "*Developing Dynamic Mean Field Theory to Model Separations with Inorganic Mesoporous Membranes: Combined Theoretical and Experimental Study*",
    Funding: $ 327,038 (50% Fan), Period: August 2014 - August 2018
    PI: David Ford, Co-PI: Peter Monson, Wei Fan
- **Joint Program between Anhui province, China, and Act-blue Inc, "**Hundred Talents Program of Anhui Province, China"
  - Title: "*Development of Small Pore Zeolites for NOx Control in Automobile Emission Control*",
    Funding: $80,000, Period: August 2014 - August 2016
    PI: Wei Fan
- **3M Corporation**, Nontenured Faculty Award,
  - Title: "*Engineering Porous Materials for Biorefinery and Biomedical applications*",
    Funding: $45,000, Period: January 2013 - December 2016
    PI: Wei Fan
- **CSP Technologies Inc.,**
  - Title: "*Adsorption Capacity of Volatile Organic Compounds*"
    Funding: $6,000, Period: May 2013 - March 2014
    PI: Wei Fan
- **CSP Technologies Inc.,**
  - Title: "*Investigation of CO Production from Polymer/4A Zeolite Composite*"
    Funding: $12,000, Period: March 2013 - December 2013.
    PI: Wei Fan
- **Rive Technology Inc.**

- Title: "*Analyzing Mass Transport in Mesoporous Zeolites*"
  Funding: $2,000, Period: May 2013 - December 2013.
  PI: Wei Fan

- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  - Title: "*Selective Hydrolysis of Cellulose by Solid Catalysts in Water*"
    Funding: $93,227, Period: September 2013 - August 2014
    PI: Wei Fan
- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  - Title: "*Catalytic Insertion for Conversion of Furans to Alkylated Aromatics*"
    Funding: $223,627(50% Fan), Period: September 2013 - August 2014
    PI: Paul J. Dauenhauer, Co-PI: Wei Fan

The grant supports Fan's group on the development of Lewis zeolites for ultra-high selective production of p-xylene from dimethlyfuran.

- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  - Title: "*Selective Hydrolysis of Cellulose by Solid Catalysts in Water*"
    Funding: $105,588, Period: September 2012 - August 2013.
    PI: Wei Fan
- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  - Title: "*Catalytic Insertion for Conversion of Furans to Alkylated Aromatics*"
    Funding: $223,627(50% Fan), Period: September 2012 - August 2013
    PI: Paul J. Dauenhauer, Co-PI: Wei Fan

The grant supports Fan's group on the development of zeolite Beta for ultra high selective production of p-xylene from dimethlyfuran.

- **Department of Energy,** Basic Energy Sciences - Catalysis Center for Energy Innovation,
  - Title: "*Catalytic Insertion for Conversion of Furans to Alkylated Aromatics (e.g. Xylenes)*" Funding: $ 223,627 (50% Fan), Period: August 2011 - July 2012.
    PI: Paul J. Dauenhauer, Co-PI: Wei Fan

The grant supports Fan's group on the synthesis of zeolites for conversion of furans to alkylated aromatics.

Educational Activities

Teaching Activities

Courses were taught at the University of Massachusetts Amherst:

- Chemical Engineering 625, *Graduate course in Reaction Engineering*
  - Teaching from 2015 to 2019
- Chemical Engineering 226, *Undergraduate course in Thermodynamics I*
  - Taught from 2011 to present
- Chemical Engineering 590D, *Graduate and senior undergraduate elective course in Nanomaterials Chemistry and Engineering (Developed by Fan)*
  - Taught from 2011 to 2014, 2021
- Chemical Engineering 290A, *Undergraduate elective course in Introduction to Renewable Energy*
  - Two lectures on Conversion of lignocellulosic biomass into fuels and Chemicals
  - Taught in Fall from 2011 to 2019
- Chemical Engineering 390C, *Design and Testing of the Chemical Engineering Car*
  - Teaching from 2016 to 2018

- Chemical Engineering 401, *Undergraduate Senior Lab*
    - Two experiments were taught in the fall of 2010 (Methanation and Ion exchange)

Mentoring of Graduate & Undergraduate Students and Postdoctoral Scholars

Graduate Students Advised (16):

Graduated

1. Ph.D. Sanket Sabnis 9/2015 - 9/2020
   Research Topic: *Synthesis of Zeolite Catalyst with Precisely Controlled Active Site Locations*
2. Ph.D. Vivek Vattipalli 9/2013 - 9/2018
   Research Topic: *Mass Transport in Hierarchical Porous Materials and Application in Mesoporous Membrane*
   Starting at BASF, USA
3. Ph.D. Xiaoduo Qi 9/2012 - 4/2019
   Research Topic: *The Investigation of Surface Barrier During Molecular Transport in Zeolite Nanoparticles*
   Starting at BASF, China
4. Ph.D. Hong Je Cho 9/2011- 9/2016
   Research Topic: *Development of Lewis/metal Bifunctional Catalysts for Biomass Conversion*
   Starting at University of Delaware as a postdoc and working at Intel Corporation, USA
5. Ph.D. Paul Dornath 9/2010 - 8/2015
   Research Topic: *Development of Heterogeneous Catalyst for Hydrolysis of Cellulose*,
   Starting at *Micromidas*, A renewable plastics company located at West Sacramento, CA
6. Ph.D. Chun-Chih Chang 9/2010 - 8/2015
   Research Topic: *Development of Heterogeneous Catalyst for Production of Aromatic Chemicals from Biomass Derived Furans*
   Starting at *W.R. Grace, Core R&D*, at Columbia, MD,
7. Ph.D. Qiyu Liu 7/2017-7/2019 (Exchange Student from University of Science and Technology of China)
   Research Topic: Selective depolymerization of cellulose into water soluble oligomers and glucose
8. Ph.D. Qiaozhi Ma 7/2017-7/2019 (Exchange Student from University of Science and Technology of China)
   Research Topic: *Development of bifunctional catalyst for lignin conversion*
9. Ph.D. Guangyue Xu 5/2017-5/2018 (Exchange Student from University of Science and Technology of China)
   Research Topic: *Hydrothermal stability of zeolite catalysts*
10. Ph.D. Chao Li 8/2012 - 8/2014 (Exchange Student from South China University of Technology)
    Research Topic: *Development of Hierarchical Zeolites for Biomass Conversion*
11. Ph.D. Chen Yu Hong 3/2013-3/2014 (Exchange Student from National Taiwan University)
    Research Topic: *Drug Delivery System with Hierarchical Porous Materials*
12. Ph.D. Huiyong Chen 9/2010 - 9/2011 (Co-advised with Prof. Michael Tsapatsis, UMN)
    Research Topic: *Synthesis of Hierarchical Zeolites for Reaction Involving Bulky Molecules*
    Current Affiliation: *Associate Professor at Northwest University, Xi'an, China*

In Progress

13. Ph.D. Jason Gulbinski
    Research Topic: *Synthesis of Phosphorus-Containing Zeolite Catalysts for Biomass Conversion*
14. Ph.D. Song Luo
    Research Topic: *Investigation of Zeolite Crystallization Mechanism Using Computational and Experimental Methods*
15. Ph.D. Kaivalya Gawande
    Research Topic: *Synthesis of Hierarchical Zeolites with Improved Mass Transport and Separation in Alkane/Alkene*
16. Ph.D. Yachan Liu
    Co-advised with Prof. Peng Bai

Postdoctoral Scholars and Visiting Scholars Advised (9):

1. Post-Doc: Dr. Qiyu Liu 10/2019-10/2020
   Research Topic: Selective Depolymerization of Cellulose into Oligomers and Glucose
   Current Affiliation: *South China University of Technology, China*
2. Post-Doc: Zhuopeng Wang 4/2011-4/2013
   Research Topic: *Development of Hierarchical Zeolites for Biomass Conversion*
   Current Affiliation: Jilin University, China
3. Visiting Scholar: Prof. Xiaoli Wang 12/2018-01/2020 (Inner Mongolia University, China)
   Research Topic: Development of Natural Zeolites for Removal of Heavy Ions
   Current Affiliation: *Inner Mongolia University, China*
4. Visiting Scholar: Prof. Feijian Chen 11/2018-12/2019 (Bengbu Normal College, China)
   Research Topic: Synthesis of Hierarchical Zeolites by Rational Design of Organic Structure Directing Agent
   Current Affiliation: *Bengbu Normal College, China*
5. Visiting Scholar: Prof. Huiyong Chen 09/2017-08/2018 (Northwest University, China)
   Research Topic: Development of Bifunctional Zeolite Catalysts for Biomass Conversion
   Current Affiliation: *Northwest University, China*
6. Visiting Scholar: Prof. Xiangke Guo 10/2017-9/2018 (Nanjing University, China)
   Research Topic: Synthesis of Phosphorous Containing Zeolite Catalysts
   Current Affiliation: *Nanjing University, China*
7. *Visiting Scholar: Prof. Hongjuan Wang* 8/2016-9/2017 (South China University of Technology, China)
   Research Topic: Synthesis of metal oxides for electronic catalysis
   Current Affiliation: *South China University of Technology, China*
8. Visiting Scholar: Prof. Junliang Wu 8/2016-9/2017 (South China University of Technology, China)
   Research Topic: Synthesis of metal nanoparticles encapsulated zeolite catalysts for oxidation of VOCs
   Current Affiliation: *South China University of Technology, China*
3. Visiting Scholar: Prof. Yongfei Li 9/2015-9/2016 (Xiangtan University, China)
   Research Topic: *Development of Lewis Acid Zeolites for the Conversion of Biomass into Fuels and Chemicals*
9. Visiting Scholar: Prof. Jinsheng Gou 6/2014-6/2015 (Beijing Forestry University, China)
   Research Topic: *Conversion of Furan into Aromatics Using Bifunctional Zeolite Catalysts*
   Current Affiliation: *Associate Professor, Beijing Forestry University, China*

Undergraduate Students Advised (33):

Supported REU Students in Summer:

1. B.S. Alexander Engstrom, REU student supported by NSF Chemistry Program in Chemistry Department of UMass, *Analysis of Structure Directing Agent Sizes and Ratios in LTA Zeolite Synthesis*, 2019
2. B.S. Li Zhang, REU student supported by NSF Chemistry Program in Chemistry Department of UMass, *Investigation of Effects of Heteroatoms on The Structure of Zeolite Gel*, 2018
3. B.S. Abdul Mughis Paracha, REU student supported by DOE from University of Delaware, *Synthesis of CHA zeolites for DeNOx application*, 2017
4. B.S. Helen Hua, REU student supported by NSF Chemistry Program in Chemistry Department of UMass, *Depolymerization of crystalline cellulose using ball-milling method*, 2017
5. B.S. Jason Gulbinski, REU student supported by DOE from University of Delaware, *Dehydration of Alcohols Using Lewis Acid Zeolite Catalysts*, 2015
6. B.S. Syed Hussain, REU student supported by NSF Chemistry Program in Chemistry Department of UMass, *Aldo Condensation Reactions Using Bronsted and Lewis Acid Zeolite Catalysts*, 2015
7. B.S. Stephen Ruzycky, REU student supported by DOE from UMass Amherst, *Development of Bifunctional Carbon Catalyst for Hydrolysis of Cellulose*, 2014
8. B.S. Kyle Whitcomb, REU student supported by DOE from UMass Amherst, *Facile Synthesis of Hierarchical ZSM-5 for Biomass Conversion*, 2013
9. B.S. Sanaz Taghvaii, REU student supported by DOE from University of Delaware, *Synthesis of Hierarchical Zeolites with Controllable Mesoporosity*, 2012

Honor College Research Thesis Students:

10. B.S. Sydney Foster, Undergraduate Research Thesis: *Inexpensive Synthesis of High-Silica CHA Zeolite*
11. B.S. Tam Nguyen, Honor College Research Thesis: *Ion-exchange of Ag^+ with mesoporous LTA zeolites*
12. B.S. Michael Stellato, Honor College Research Thesis: *Controlled Synthesis of CHA from Zeolite Phase Transformation*
13. B.S. Nicholas Barberio, Honor College Research Thesis: *Understanding of Surface Barrier Phenomena in Hierarchical Zeolites*
14. B.S. Dimitri Livitz, Honor College Research Thesis: *Facile Synthesis of Hierarchical Zeolites without Using Hard Template*

Independent Study in Research Group:

15. B.S. Anshula Kale, Research Topic: *Development of MOF materials of stabilization of Vitamin C (Current)*
16. B.S. Kirby Yen, Research Topic: *Investigation of crystal structure of zeolites using XRD (Current)*
17. B.S. Mahidhar Lakkavaram, Research Topic: *Development of porous materials for drug delivery (Current)*
18. B.S. Jonathan Delaney, Research Topic: *P Zeolite Catalysts for Alcohols Dehydration*
19. B.S. Jonathan Chen, Research Topic: *Rapid Synthesis of SSZ-13 Zeolites*
20. B.S. Neal Chadha, Research Topic: *Synthesis of SSZ-13 Using Dry Gel Conversion Method*
21. B.S. Abdul Mughis Paracha, Research Topic: *Crystallization Process of SSZ-13 Zeolite*
    Rising Researcher Award 2018
22. B.S. Sydney Foster, Research Topic: *Synthesis of SSZ-13 Catalyst Using Tetraethylammonium Hydroxide*
23. B.S. Nicholas Lines, Research Topic: *Synthesis of Alkali Supported Clay Catalyst for Combustion of Soots*
24. B.S. Xuanting Wang, Research Topic: *Characterization of Lewis Acid Zeolite Catalysts*
    Rising Researcher Award 2015
25. B.S. Miles Sakwa-Novak, Research Topic: *Growth Mechanism of Silica Nanoparticles*

26. B.S. Timothy Coogan, Research Topic: *Zero Length Chromatography* (Co/advised with Prof. Paul Dauenhauer)
27. B.S. Sanaz Taghvaii, Research Topic: *Hydrothermal Stability of Three Dimensionally Ordered Mesoporous Imprinted Zeolites*
28. B.S. Raymond Chan, Research Topic: *Synthesis of Mesoporous LTL and MOR Using Carbon Template*
29. B.S. Hiu Fai Yeung, Research Topic: *Synthesis of Ag Containing Zeolite in Cellulose Nanofiber for Water Purification* (Co/advised with Prof. Jessica Schiffman)
30. B.S. Nathan Abraham, Research Topic: *Synthesis of Solid Lewis Acid Catalyst-Nb_2O_5*
31. B.S. Alex Stephen, Research Topic: *Synthesis of 3DOm Carbon and Ordered Mesoporous ZSM-5*
32. B.S. Anthony Valle, Research Topic: *Effects of Calcination on the Catalytic Activity of Zeolite Catalysts*
33. B.S. Wayne Lee, Research Topic: *Synthesis of 3DOm Carbon with Controlled Morphology*