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CURRICULUM VITAE

Education and training

- 02/2005 Facultas Docendi (Habilitation), Physical Chemistry, Humboldt-Universität zu Berlin, Germany
02/1994 Dr. rer. nat. (“summa cum laude”), Faculty of Chemistry and Pharmacy, Ludwig-Maximilians-Universität München, Germany (Dissertation in Physical Chemistry, Advisor: H. Knözinger)
02/1990 Degree “Diplom-Chemiker – Univ.” (~M.S. equivalent), Ludwig-Maximilians-Universität München (Thesis Advisor: Helmut Knözinger)
1986–1990 Study of Chemistry, Pharmacology and Toxicology, Ludwig-Maximilians-Universität München
1984–1986 Study of Chemistry, Eberhard-Karls-Universität Tübingen, Germany, “Vordiplom” 1986

Research and professional experience

- 9/2022–present Faculty, Materials Science and Engineering Graduate Program
01/2015–present Professor, Department of Chemical and Biomolecular Engineering, University of Massachusetts Amherst, MA
09/2021–12/2021 Lady Davis Visiting Professor, Technion – Israel Institute of Technology, Haifa, Israel
10/2008–08/2015 Professor (2012–2015) and Associate Professor (2008–2012), School of Chemical, Biological & Materials Engineering, University of Oklahoma, Norman, OK
01/1996–09/2008 Research Group Leader (April 1996–Sept. 2008) and Postdoctoral Researcher (Jan. 1996–March 1996) in the Department of Inorganic Chemistry (Director: Robert Schlögl) at the Fritz Haber Institute of the Max Planck Society, Berlin, Germany
05/1994–12/1995 Postdoctoral Researcher in the Department of Chemical Engineering & Materials Science (Postdoctoral Advisor: Bruce C. Gates), University of California, Davis, CA, USA
04/1993–04/1994 Research Assistant at Ludwig-Maximilians-Universität München, Germany
05/1989–02/1993 Siemens AG, Power Generation Group, München, Erlangen, and Redwitz, Germany

Awards

- 2025/2026 Samuel E. Conti Faculty Fellowship, University of Massachusetts Amherst
2022 Excellence in Peer Reviewing, American Chemical Society Petroleum Research Fund
2021 Fellow, American Institute of Chemical Engineers
2021 Lady Davis Fellowship for Visiting Professors, Faculty of Chemical Engineering, Technion
2021 Outstanding Senior Faculty Award, College of Engineering, Univ. Mass. Amherst
2018 Excellence in Catalysis Award, Catalysis Society of Metropolitan New York
04/2014–08/2015 Anadarko Petroleum Corporation Presidential Professor, University of Oklahoma
2010 2nd Prize for Course Instructors, College of Engineering, University of Oklahoma
2000 Young Scientists Prize of the *International Association of Catalysis Societies*
1996 Award for Young Scientists (Carl Zerbe Award) of the *DGMK German Society for Petroleum and Coal Science and Technology*

Memberships in professional societies

- 2010–present North American Catalysis Society (via New England / Southwest Catalysis Society)
2010–present American Chemical Society
2008–present AIChE (American Institute of Chemical Engineers)
2003–present Deutscher Hochschulverband (German University Association)
1999–present Deutsche Bunsengesellschaft für Physikalische Chemie e.V. (German Bunsen Society for Physical Chemistry)
1996–present DGMK (German Society for Sustainable Energy Carriers, Mobility and Carbon Cycles)
1996–present DECHEMA Gesellschaft für Chemische Technik und Biotechnologie e.V. (Society for Chemical Engineering and Biotechnology)

PUBLICATIONS

1. Summary

| | |
|-------------------------|---|
| Edited works: | 7 volumes of book series, 2 journal issues |
| Reviews, book chapters | 7 published |
| Peer-reviewed articles: | 110 published, 1 submitted |
| Other publications: | 1 book review, 10 proceedings articles (unreviewed), 3 monographs (theses) |
| Hirsch index: | 38 (Web of Science Core Collection) as of Dec. 2025, search for authors “jentoft f* or lange f and (knozinger or gates)” 43 (Google Scholar) |
| i10 Index | 99 (Google Scholar) |
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2. Edited books

1. "Advances in Catalysis", Volume 58, 330 pages, F.C. Jentoft, Editor; Academic Press (Elsevier), Amsterdam, 2015. ISBN: 9780128021262.
2. "Advances in Catalysis", Volume 57, 434 pages, F.C. Jentoft, Editor; Academic Press (Elsevier), Amsterdam, 2014. ISBN: 9780128001271.
3. "Advances in Catalysis", Volume 56, 382 pages, B.C. Gates and F.C. Jentoft, editors; Academic Press (Elsevier), Amsterdam, 2013. ISBN: 9780124201736.
4. "Advances in Catalysis", Volume 55, 264 pages, B.C. Gates and F.C. Jentoft, editors; Academic Press (Elsevier), Amsterdam, 2012. ISBN: 9780123855169.
5. "Advances in Catalysis", Volume 54, 352 pages, B.C. Gates and H. Knözinger, editors; F.C. Jentoft, Associate Editor, Academic Press (Elsevier), Amsterdam, 2011. ISBN: 9780123877727.
6. "Advances in Catalysis", Volume 53, 644 pages, B.C. Gates and H. Knözinger, editors; F.C. Jentoft, Associate Editor, Academic Press (Elsevier), Amsterdam, 2010. ISBN: 9780123808523.
7. "Advances in Catalysis", Volume 52, 488 pages, B.C. Gates and H. Knözinger, editors; F.C. Jentoft, Associate Editor, Academic Press (Elsevier), Amsterdam, 2009. ISBN: 9780123743367.

3. Edited journal issues

1. Topics in Catalysis, 60, 19–20 (2017) 1483–1753. [↗](#) Special Issue “Catalyst Characterization by Vibrational Spectroscopy” in memoriam of Helmut Knözinger
Guest Editors: *F.C. Jentoft and G. Mestl*
Editors-in-Chief: H.-J. Freund and G.A. Somorjai.
2. Topics in Catalysis 54, 5–7 (2011) 287–457. [↗](#) Festschrift entitled “Concepts in Catalysis Research” on the occasion of the 70th birthday of Bruce C. Gates
Guest Editors: *F.C. Jentoft and H. Knözinger*
Editors-in-Chief: N. Kruse and G.A. Somorjai.

4. Reviews, book chapters and contributions to reference works (upon invitation)

1. *Minireview*: Transition metal-catalyzed deoxydehydration: Missing pieces of the puzzle, *F.C. Jentoft*, Catalysis Science & Technology 12 (2022) 6308–6358. [↗](#)
2. Solid Acids and Bases, *F.C. Jentoft*, in Comprehensive Inorganic Chemistry II Vol. 7, Eds. Jan Reedijk and Kenneth R. Poeppelmeier, Oxford: Elsevier, Amsterdam, 2013, pp. 205–230. [↗](#)
3. Electronic Spectroscopy: Ultraviolet-Visible and Near-IR Spectroscopy, *F.C. Jentoft*, Characterization of Solid Materials and Heterogeneous Catalysts: From Structure to Surface Reactivity, Eds. M. Che, J.C. Védrine, Wiley-VCH, Weinheim, Germany, 2012, pp. 89–147. [↗](#)
4. UV–vis–NIR Spectroscopy in Catalysis: Theory, Experiment, Analysis and Application under Reactive Conditions, *F.C. Jentoft*, Advances in Catalysis 52 (2009) 129–211. [↗](#)

- Oxo-Anion Modified Oxides, *F.C. Jentoft*, Handbook of Heterogeneous Catalysis, Vol. I, Eds. G. Ertl, H. Knözinger, F. Schüth, J. Weitkamp, 2nd edition, Wiley-VCH, Weinheim, Germany, 2008, pp. 262–278.
- 13 Keywords: Carbocation, DeNO_x-Reaction, Dowex, Isoelectric Point, Isomerization Catalysts, Micropores, Microporous Solids, Photoinduced Oxidation/Reduction of Water, Probe Molecules, Silica, Solid Acid Catalysis, Solid Base Catalysis, Sulfuric Acid Synthesis, *F.C. Jentoft*, “Catalysis from A to Z - A Concise Encyclopedia”, Eds. B. Cornils, W.A. Herrmann, R. Schlögl, C.-H. Wong, Wiley-VCH, Weinheim, Germany, 2000.
- Photoelectron Spectroscopy as a Tool for Studying Ceramic Interfaces: A Tutorial, *F.C. Jentoft, G. Weinberg, U. Wild, R. Schlögl*, Proceedings of the Workshop on ‘Grain Boundary Dynamics of Precursor-Derived Ceramics’, in “Precursor-Derived Ceramics”, Eds. J. Bill, F. Wakai, F. Aldinger, Wiley-VCH, Weinheim, Germany, 1999, pp. 175–187.

5. Journal articles (with peer review)

- Intrinsic activation energies for ring contraction of allylic cations in zeolites, *D. Bhave, F.C. Jentoft*, Journal of Catalysis **454** (2026) 116555 (17 pages). [↗](#)
- Synthesis of phase-pure W₂C and WC by separation of reduction and carburization and their differing performance as hydrogenation catalysts, *P. Schlachta, R.E. Jentoft, F.C. Jentoft, K. Köbler*, Journal of Physical Chemistry C **129**, 47 (2025, 20907-20921). [↗](#)
- An adaptable model to predict the induction time of the Phillips catalyst, *J.D. Parab, M.P. McDaniel, F.C. Jentoft*, Journal of Catalysis **450** (2025) 116311. [↗](#)
- Ethanol dehydration over silica-supported H₃PW₁₂O₄₀ and the role of water, *L. Frattini, F.C. Jentoft, C.M.A. Parlett, V.D.B.C. Dasireddy, D. Jampaiah, H. Arandiyana, C. Len, A.F. Lee, K. Wilson*, ACS Catalysis **15** (2025) 9430–9441. [↗](#)
- Insights into effects of zeolite framework topology on the cross aldol reaction of benzaldehyde with 3-pentanone, *I.O. Ogabiela and F.C. Jentoft*, Journal of Catalysis **443** (2025) 115965. [↗](#)
- Spectroscopic summation of surface species as a measure of zeolite hydride transfer activity, *E.D. Hernandez, D. Bhave, F.C. Jentoft*, Journal of Catalysis **443** (2025) 115917 (16 pages). [↗](#)
- Elucidating cooperative interactions between grafted amines and tin or titanium sites on silica, *C. Khoury, S. Holton, D. Shpasser, E. Hallo, A. Kulkarni, F.C. Jentoft, O.M. Gazit*, ACS Catalysis **12** (2022) 9846-9856. [↗](#)
- Atmospheric-pressure conversion of CO₂ to cyclic carbonates over constrained dinuclear iron catalyst, *S. Pappuru, D. Shpasser, R. Carmeli, P. Shekhter, F.C. Jentoft, O.M. Gazit*, ACS Omega **7** (2022) 24656-24661. [↗](#)
- Selective synthesis of tungsten carbide phases W₂C and WC as hydrogenation catalysts, *P. Bretzler, M. Huber, A.A. Rane, R.E. Jentoft, K. Köbler, F.C. Jentoft*, Journal of Catalysis **405** (2022) 60-73. [↗](#)
- Shape-selective synthesis of alkylcyclopentenyl cations in zeolites and spectroscopic distinction of constitutional isomers, *E.D. Hernandez, B. Manookian, S.M. Auerbach, F.C. Jentoft*, ACS Catalysis **11** (2021) 12893–12914. [↗](#)
- Experimental and DFT calculated IR spectra of guests in zeolites: acyclic olefins and host-guest interactions, *B. Manookian, E.D. Hernandez, M.D. Baer, C.J. Mundy, F.C. Jentoft, S.M. Auerbach*, Journal of Physical Chemistry C **124** (2020) 10561–10572. [↗](#)
- Spectroscopic signatures reveal cyclopentenyl cation contributions in methanol-to-olefins catalysis, *E.D. Hernandez, F.C. Jentoft*, ACS Catalysis **10** (2020) 5764–5782. [↗](#)
- Fundamental insights into deactivation by leaching during rhenium-catalyzed deoxydehydration, *B.E. Sharkey, F.C. Jentoft*, ACS Catalysis **9** (2019) 11317–11328. [↗](#)
- Poisoning and competitive adsorption effects during phenol hydrogenation on platinum in water-alcohol mixtures, *Z. Liu, I.A. Hamad, Y. Li, Y. Chen, S. Wang, R.E. Jentoft, F.C. Jentoft*, Applied Catalysis A: General **585** (2019) 117199. [↗](#)
- Products of the initial reduction of the Phillips catalyst by olefins, *J. Joseph, K.C. Potter, M.J. Wulfers, E. Schwerdtfeger, M.P. McDaniel, F.C. Jentoft*, Journal of Catalysis **377** (2019) 550–564. [↗](#)
- Hydrogenation of *o*-cresol at the water/Pt(111) interface, *Y. Li, Z. Liu, Y. Liu, S.P. Crossley, F.C. Jentoft, S. Wang*, Journal of Physical Chemistry C **123** (2019) 5378–5384. [↗](#)

17. Highly selective molybdenum-based catalysts for ring hydrogenation and contraction, *A. Mehdad, R.E. Jentoft, F.C. Jentoft*, *Applied Catalysis A: General* **569** (2019) 45–56. [↗](#)
18. Single-phase mixed molybdenum-tungsten carbides: synthesis, characterization and catalytic activity for toluene conversion, *A. Mehdad, R.E. Jentoft, F.C. Jentoft*, *Catalysis Today* **323** (2019) 112–122. [↗](#)
19. Effect of hydrogen coverage on hydrogenation of *o*-cresol on Pt(111), *Y. Li, Z. Liu, S.P. Crossley, F.C. Jentoft, S. Wang*, *Applied Surface Science* **443** (2018) 575–580. [↗](#)
20. Intraparticle diffusional effects vs. site effects on reaction pathways in liquid-phase cross aldol reactions, *K. Ponnuru, J.C. Manayil, H.J. Cho, W. Fan, K. Wilson, F.C. Jentoft*, *ChemPhysChem* **19** (2018) 386–401. [↗](#)
21. New solid oxo-rhenium and oxo-molybdenum catalysts for the deoxydehydration of glycols to olefins, *B.E. Sharkey, A.L. Denning, F.C. Jentoft, R. Gangadhar, T.V. Gopaladasu, K.M. Nicholas*, *Catalysis Today* **310** (2018) 86–93. [↗](#)
22. Tuning solid catalysts to control regioselectivity in cross aldol condensations with unsymmetrical ketones for biomass conversion, *K. Ponnuru, J.C. Manayil, H.J. Cho, A. Osatiashtiani, W. Fan, K. Wilson, F.C. Jentoft*, *Molecular Catalysis* **458** (2018) 247–260. [↗](#)
23. Single-phase mixed molybdenum-niobium carbides: Synthesis, characterization and multifunctional catalytic behavior in toluene conversion, *A. Mehdad, R.E. Jentoft, F.C. Jentoft*, *Journal of Catalysis* **351** (2017) 161–173. [↗](#)
24. Octyl co-grafted PrSO₃H/SBA-15: Tunable hydrophobic solid acid catalysts for acetic acid esterification, *J.C. Manayil, V.C. dos Santos, F.C. Jentoft, M. Granollers Mesa, A.F. Lee, K. Wilson*, *ChemCatChem* **9** (2017) 2231–2238. [↗](#)
25. Passivation agents and conditions for Mo₂C and W₂C: Effect on catalytic activity for toluene hydrogenation, *A. Mehdad, R.E. Jentoft, F.C. Jentoft*, *Journal of Catalysis* **347** (2017) 89–101. [↗](#)
26. Hydrogenation of *o*-cresol on platinum catalysts: Catalytic experiments and first-principles calculations, *Y. Li, Z. Liu, W. Xue, S.P. Crossley, F.C. Jentoft, S. Wang*, *Applied Surface Science* **393** (2017) 212–220. [↗](#)
27. Reduction of the Phillips catalyst by various olefins: Stoichiometry, thermochemistry, reaction products and polymerization activity, *K.C. Potter, C.W. Beckerle, F.C. Jentoft, E. Schwerdtfeger, M.P. McDaniel*, *Journal of Catalysis* **344** (2016) 657–668. [↗](#)
28. Mechanism of *n*-butane skeletal isomerization on H-mordenite and Pt/H-mordenite, *M.J. Wulfers, F.C. Jentoft*, *Journal of Catalysis* **330** (2015) 507–519. [↗](#)
29. The role of cyclopentadienium ions in methanol-to-hydrocarbons chemistry, *M.J. Wulfers, F.C. Jentoft*, *ACS Catalysis* **4** (2014) 3521–3532. [↗](#)
30. Deoxydehydration of glycols catalyzed by carbon-supported perrhenate, *A.L. Denning, H. Dang, Z. Liu, K.M. Nicholas, F.C. Jentoft*, *ChemCatChem* **5** (2013) 3567–3570. [↗](#)
31. Identification of carbonaceous deposits formed on H-mordenite during alkane isomerization, *M.J. Wulfers, F.C. Jentoft*, *Journal of Catalysis* **307** (2013) 204–213. [↗](#)
32. Quantitative analysis of IR intensities of alkanes adsorbed on solid acid catalysts, *F.C. Jentoft, J. Kröhnert, I.R. Subbotina, V.B. Kazansky*, *Journal of Physical Chemistry C* **117** (2013) 5873–5881. [↗](#)
33. Evolution of carbonaceous deposits on H-Mordenite and Pt-doped H-mordenite during *n*-butane conversion, *M.J. Wulfers, G. Tzolova-Müller, J.I. Villegas, D.Yu. Murzin, F.C. Jentoft*, *Journal of Catalysis* **296** (2012) 132–142. [↗](#)
34. Redox properties of manganese-containing zirconia solid solution catalysts analyzed by in situ UV–vis spectroscopy and crystal field theory, *S.I. Klokishner, O. Reu, C.E. Chan Thaw, F.C. Jentoft, R. Schlögl*, *Journal of Physical Chemistry A* **115** (2011) 8100–8112. [↗](#)
35. The balance between reactivity and stability of modified oxide surfaces illustrated by the behavior of sulfated zirconia catalysts, *B.S. Klose-Schubert, R.E. Jentoft, F.C. Jentoft*, *Topics in Catalysis* **54** (2011) 398–414. [↗](#)
36. Adsorption–desorption equilibrium investigations of *n*-butane on nanocrystalline sulfated zirconia thin films, *R. Lloyd, T.W. Hansen, W. Ranke, F.C. Jentoft, R. Schlögl*, *Applied Catalysis A: General* **391** (2011) 215–224. [↗](#)
37. Sol–gel prepared nanoscopic metal fluorides - a new class of tunable acid-base catalysts, *S. Wuttke, S.M. Coman, J. Kröhnert, F.C. Jentoft, E. Kemnitz*, *Catalysis Today* **152** (2010) 2–10. [↗](#)

38. Characterization of catalysts in their active state by adsorption microcalorimetry: experimental design and application to sulfated zirconia, *S. Wrabetz, X. Yang, G. Tzolova-Müller, R. Schlögl, F.C. Jentoft*, *Journal of Catalysis* **269** (2010) 351–358. [↗](#)
39. Activation of dihydrogen on supported and unsupported silver catalysts, *J. Hohmeyer, E. Kondratenko, M. Bron, J. Kröhnert, F.C. Jentoft, R. Schlögl, P. Claus*, *Journal of Catalysis* **269** (2010) 5–14. [↗](#)
40. In situ surface characterization of the intermetallic compound PdGa–A highly selective hydrogenation catalyst, *K. Kovnir, M. Armbrüster, D. Teschner, T. Venkov, L. Szentmiklósi, F.C. Jentoft, A. Knop-Gericke, Yu. Grin, R. Schlögl*, *Surface Science* **603** (2009) 1784–1792. [↗](#)
41. In-situ investigation of gas phase radical chemistry in the catalytic partial oxidation of methane on platinum, *M. Geske, K. Pelzer, R. Horn, F.C. Jentoft, R. Schlögl*, *Catalysis Today* **142** (2009) 61–69. [↗](#)
42. Integral absorption coefficients of C–H stretching bands in IR spectra of ethane adsorbed by cationic forms of Y zeolite, *I.R. Subbotina, V.B. Kazansky, J. Kröhnert, F.C. Jentoft*, *Journal of Physical Chemistry A* **113** (2009) 839–844. [↗](#)
43. Catalytically active gold clusters and nanoparticles for CO oxidation, *A.N. Pestryakov, N. Bogdanchikova, A. Simak, I. Tuzovskaya, F. Jentoft, A. Simak*, *Surface Science* **601** (2007) 3792–3795. [↗](#)
44. Partial pressure dependent in-situ spectroscopic study on the preferential CO oxidation in hydrogen (PROX) over Pt/ceria catalysts, *D. Teschner, A. Wootsch, O. Pozdnyakova-Tellinger, J. Kröhnert, E.M. Vass, M. Hävecker, S. Zafeirotos, P. Schnörch, F.C. Jentoft, A. Knop-Gericke, R. Schlögl*, *Journal of Catalysis* **249** (2007) 316–325. [↗](#)
45. A new approach to well-defined, stable and site-isolated catalysts, *K. Kovnir, M. Armbrüster, D. Teschner, T. Venkov, F.C. Jentoft, A. Knop-Gericke, Yu. Grin, R. Schlögl*, *Science and Technology of Advanced Materials* **8** (2007) 420–427. [↗](#)
46. Surface-water assisted preferential CO oxidation reaction (PROX) on Pt/CeO₂ catalyst, *O. Pozdnyakova-Tellinger, D. Teschner, J. Kröhnert, F.C. Jentoft, A. Knop-Gericke, R. Schlögl, A. Wootsch*, *Journal of Physical Chemistry C* **111** (2007) 5426–5431. [↗](#)
47. Steam reforming of methanol over copper-containing catalysts: influence of support material on microkinetics, *B. Frank, F.C. Jentoft, H. Soerijanto, J. Kröhnert, R. Schlögl, R. Schomäcker*, *Journal of Catalysis* **246** (2007) 177–192. [↗](#)
48. Redox properties of vanadium ions in SBA-15 supported vanadium oxide: an FTIR spectroscopic study, *T.V. Venkov, C. Hess, F.C. Jentoft*, *Langmuir* **23** (2007) 1768–1777. [↗](#)
49. Silver as acrolein hydrogenation catalyst: intricate effects of catalyst nature and reactant partial pressures, *M. Bron, D. Teschner, A. Knop-Gericke, F.C. Jentoft, J. Kröhnert, J. Hohmeyer, C. Volckmar, B. Steinhauer, R. Schlögl, P. Claus*, *Physical Chemistry Chemical Physics* **9** (2007) 3559–3569 and a correction in **10** (2008) 7325–7327. [↗](#)
50. Activation and isomerization of *n*-butane on sulfated zirconia model systems - An integrated study across the materials and pressure gaps, *C. Breitkopf, H. Papp, X. Li, R. Olindo, J.-A. Lercher, R. Lloyd, S. Wrabetz, F.C. Jentoft, K. Meinel, S. Förster, K.-M. Schindler, H. Neddermeyer, W. Widdra, A. Hofmann, J. Sauer*, *Physical Chemistry Chemical Physics* **9** (2007) 3600–3618. [↗](#)
51. Intensities of C-H IR stretching bands of ethane and propane adsorbed by zeolites as a new spectral criterion of their chemical activation via vibrational polarization, *V.B. Kazansky, I.R. Subbotina, F.C. Jentoft, R. Schlögl*, *Journal of Physical Chemistry B* **110** (2006) 17468–17477. [↗](#)
52. In situ spectroscopic investigation of activation, start-up and deactivation of promoted sulfated zirconia catalysts, *B.S. Klose, F.C. Jentoft, P. Joshi, A. Trunschke, R. Schlögl, I.R. Subbotina, V.B. Kazansky*, *Catalysis Today* **116** (2006) 121–131. [↗](#)
53. Intensities of combination IR bands as indication of a concerted mechanism of proton transfer from acidic hydroxyl groups in zeolites to ethylene hydrogen-bonded by protons, *V.B. Kazansky, I.R. Subbotina, F.C. Jentoft*, *Journal of Catalysis* **240** (2006) 66–72. [↗](#)
54. A molecular beam mass spectrometer equipped with a catalytic wall reactor for in situ studies in high temperature catalysis research, *R. Horn, K. Ihmann, J. Ihmann, F.C. Jentoft, M. Geske, A. Taba, K. Pelzer, R. Schlögl*, *Review of Scientific Instruments* **77** (2006) 054102. [↗](#)
55. Unusual infrared spectrum of ethane adsorbed by gallium oxide, *V.B. Kazansky, I.R. Subbotina, A.A. Pronin, R. Schlögl, F.C. Jentoft*, *Journal of Physical Chemistry B* **110** (2006) 7975–7978. [↗](#)

56. *n*-Butane isomerization catalyzed by sulfated zirconia nanocrystals supported on silica or γ -alumina, X. Yang, R.E. Jentoft, F.C. Jentoft, *Catalysis Letters* **106** (2006) 195–203. [↗](#)
57. Preferential CO oxidation in hydrogen (PROX) on ceria supported catalysts: PART II. Oxidation state and surface species on Pd/CeO₂ under reaction conditions, suggested reaction mechanism, O. Pozdnyakova, D. Teschner, A. Wootsch, J. Kröhnert, B. Steinbauer, H. Sauer, Z. Paál, L. Toth, F.C. Jentoft, A. Knop-Gericke, R. Schlögl, *Journal of Catalysis* **237** (2006) 17–28. [↗](#)
58. Preferential CO oxidation in hydrogen (PROX) on ceria supported catalysts: PART I. Oxidation state and surface species on Pt/CeO₂ under reaction conditions, O. Pozdnyakova, D. Teschner, A. Wootsch, J. Kröhnert, B. Steinbauer, H. Sauer, Z. Paál, L. Toth, F.C. Jentoft, A. Knop-Gericke, R. Schlögl, *Journal of Catalysis* **237** (2006) 1–16. [↗](#)
59. Rapid genesis of active phase during calcination of promoted sulfated zirconia catalysts, A.H.P. Hahn, R.E. Jentoft, T. Ressler, G. Weinberg, R. Schlögl, F.C. Jentoft, *Journal of Catalysis* **236** (2005) 324–334. [↗](#)
60. Effect of Mn and Fe on the reactivity of sulfated zirconia towards H₂ and *n*-butane: A diffuse reflectance IR spectroscopic investigation, B.S. Klose, F.C. Jentoft, R. Schlögl, I.R. Subbotina, V.B. Kazansky, *Langmuir* **21** (2005) 10564–10572. [↗](#)
61. Formation of gold nanoparticles in zeolites, A. Pestryakov, I. Tuzovskaya, E. Smolentseva, N. Bogdanchikova, F.C. Jentoft, A. Knop-Gericke, *International Journal of Modern Physics B* **19** (2005) 2321–2326. [↗](#)
62. In situ diffuse reflectance IR spectroscopic investigation of promoted sulfated zirconia catalysts during *n*-butane isomerization, B.S. Klose, F.C. Jentoft, R. Schlögl, *Journal of Catalysis* **233** (2005) 68–80. [↗](#)
63. Morphology-controlled reactivity of carbonaceous materials towards oxidation, J.-O. Müller, D.S. Su, R.E. Jentoft, J. Kröhnert, F.C. Jentoft, R. Schlögl, *Catalysis Today* **102–103** (2005) 259–265. [↗](#)
64. Interaction between sulfated zirconia and alkanes: Prerequisites for active sites – formation and stability of reaction intermediates, X. Li, K. Nagaoka, L.J. Simon, J.A. Lercher, S. Wrabetz, F.C. Jentoft, C. Breitkopf, S. Matysik, H. Papp, *Journal of Catalysis* **230** (2005) 214–225. [↗](#)
65. In-situ XANES study of Mn in promoted sulfated zirconia catalysts, R.E. Jentoft, A.H.P. Hahn, F.C. Jentoft, T. Ressler, *Physical Chemistry Chemical Physics* **7** (2005) 2830–2838. [↗](#)
66. IR spectroscopic investigation of heteropolymolybdate catalysts: Acidic properties and reactivity towards propene, F.C. Jentoft, J. Kröhnert, R. Schlögl, *Zeitschrift für Physikalische Chemie* **219** (2005) 1019–1045. [↗](#)
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PRESENTATIONS

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2. Invited seminars

1. Last but not least step in catalyst synthesis: The startup, W. R. Grace & Co., Virtual: Columbia, MD, Oct. 29, 2025.
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3. Spectroscopic tracking of methanol-to-hydrocarbons chemistry in zeolite pores, ExxonMobil Research, Virtual: Clinton, NJ - Baytown, TX - Machelen, Belgium, Nov. 17, 2023.
4. Direct observation of transformations and their kinetics in zeolite pores, Monthly Meeting of the Catalysis Society of Metropolitan New York, Somerset, NJ, USA, Sept. 20, 2023.
5. Nature and dynamics of catalytically active centers: Insights from in situ spectroscopy, Department of Chemical and Biological Engineering, Princeton University, Princeton, NJ, USA, Sept. 13, 2023.
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8. Spectroscopic identification of surface intermediates in acid catalysis, Virtual Meeting of the Michigan Chapter of the North American Catalysis Society, Nov. 11, 2020.
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12. Controlling selectivity in aldol reactions via heterogeneous catalysis, Dept. of Chemical Engineering, Univ. of New Hampshire, Durham, NH, USA, Oct. 18, 2019.
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16. *Excellence in Catalysis Award Lecture*: Tracing reaction steps on solid acid catalysts by spectroscopy, Monthly Meeting of The Catalysis Society of Metropolitan New York, Somerset, NJ, USA, May 16, 2018.
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20. Single phase mixed metal carbides: Synthesis and catalytic properties, Catalysis Seminar, Dept. of Chemical & Biomolecular Engineering, UC Berkeley, USA, Nov. 18, 2016.
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45. Aufklärung der Wirkungsweise von Festkörperkatalysatoren durch Infrarotspektroskopie (Elucidation of solid state catalyst operation using infrared spectroscopy), Technische Univ. Berlin, Germany, April 8, 2005.
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50. Zirconiumdioxidkatalysatoren für die Alkanisomerisierung (Zirconia catalysts for alkane isomerization), Physikalische Chemie, Univ. Bremen, Germany, April 18, 2002.
51. Preparation, activity, and structural stability of promoted sulfated Zirconia, Seminar of Prof. Dr. Roel Prins' group (ETH Zürich), San Bernardino, Switzerland, Feb. 11–14, 2001.
52. Neue Erkenntnisse über Katalysatoren aus sulfatiertem Zirkonoxid (New findings on sulfated zirconia catalysts), Physikalisch-Chemisches Kolloquium, Ludwig-Maximilians-Univ. München, Germany, Jan. 12, 2001.
53. Neue Erkenntnisse über Katalysatoren aus sulfatiertem Zirkonoxid (New findings on sulfated zirconia catalysts), Fachinstitut für Physikalische und Theoretische Chemie, Humboldt-Univ. zu Berlin, Germany, Oct. 26, 2000.
54. Charakterisierung von Zirkonoxidkatalysatoren (Characterization of zirconia catalysts), Seminar für fortgeschrittene Studenten, Diplomanden und Doktoranden am Anorganisch-Chemischen Institut der Technische Univ. München, Germany, May 26, 2000.
55. Präparation dünner Zirkonoxidschichten aus wässrigem Medium (Preparation of thin zirconia films from aqueous medium), Physikalisch-Chemisches Kolloquium der Univ. Stuttgart, Germany, Dec. 15, 1998.
56. Sulfatierte Zirkonoxide: Saure Katalysatoren? (Sulfated zirconias – acid catalysts?), Seminar über Experimentelle und Theoretische Aspekte der Oberflächenchemie, Freie Univ. Berlin, Germany, Dec. 2, 1998.

57. Sulfatiertes Zirkonoxid - ein Einblick in Katalyse und Charakterisierung (Sulfated zirconia – insight into catalysis and characterization), Hoechst AG, Frankfurt, Germany, April 1, 1997.
58. Arsenic as a poison for SCR catalysts, Seminar at the Dept. of Chemical Engineering & Materials Science, Univ. of California at Davis, Davis, CA, USA, May 5, 1995.

3. Invited lectures at conferences and symposia

1. *Panelist Short Presentation*: Persistent surface species and their persistent misrepresentation, Maria Flytzani-Stephanopoulos Symposium on Single-Site Catalysis, Tufts University, Medford, MA, USA, Oct. 10, 2025.
2. *Keynote Lecture*: Spectroscopic analysis of transformations in zeolite pores, Winter Meeting of the New England Catalysis Society, Worcester Polytechnic Institute, Worcester, MA, USA, Jan. 6, 2023.
3. Analogies in acid catalysis: Unsaturated carbenium ions in liquid, solid and gas phase environments, American Chemical Society Spring Meeting, San Diego, CA, USA, March 20-24, 2022.
4. The potential of aldol chemistry to deliver various classes of products, #ChemistsLive ACS Cross-Division Virtual Live Content Event, Sept. 25, 2020.
5. *Keynote Lecture*: Reaction sequences on solid acid surfaces elucidated by in situ spectroscopy, 26th North American Catalysis Society Meeting, Chicago, IL, June 23-28, 2019.
6. Carbocation chemistry on solid acid catalysts observed by in situ spectroscopy, Operando Spectroscopy for Catalysis Symposium, 256th American Chemical Society National Meeting, Boston, MA, USA, August 19-23, 2018.
7. Spectroscopic observation of reaction sequences on solid acid catalysts, Catalysis Workshop East, Hancock, MA, USA, Aug. 13-17, 2018.
8. Regioselectivity and chemoselectivity in heterogeneously catalyzed cross-aldol condensations with unsymmetrical ketones, Catalytic Conversion of Biomass Derived Molecules to Chemicals & Fuels Symposium, 255th American Chemical Society National Meeting, New Orleans, LA, USA, March 18-22, 2018.
9. *Keynote Lecture*: Tuning solid catalysts for aldol reactions, 4th Intl. Congress on Catalysis for Biorefineries (*CatBIOR*), Lyon, France, Dec. 11–15, 2017.
10. Single phase mixed metal carbides: synthesis and catalytic properties, Energy & Fuels Storch Award in Fuel Science: Symposium in honor of Umit S. Ozkan, 254th ACS National Meeting, Washington, DC, USA Aug. 20–24, 2017.
11. *Keynote Lecture*: Spectroscopic observation of hydrocarbon reactions on acid sites, 8th Intl. Symposium on Acid-Base Catalysis, Rio De Janeiro, Brazil, May 7–10, 2017.
12. *Plenary Lecture*: Developing catalytic processes for deoxygenation of biomass-derived feedstocks: vicinal diols to olefins, The 8th Eastern Mediterranean Chemical Engineering Conference, Haifa, Israel, Feb. 26–March 1, 2017.
13. Heterogeneously catalyzed single-step conversion of glycols to olefins, Symposium on Novel Catalysts for Energy and Environmental Issues, Sapporo, Japan, June 30–July 1, 2016.
14. *Keynote Lecture*: Synthesis and catalytic properties of single phase mixed metal carbides, 2016 Annual Symposium of The Catalysis Society of Metropolitan New York, Rutgers Univ., New Brunswick, NJ, USA, March 23, 2016.
15. Insights into the catalytic chemistry of carbides and zeolites, Intl. Symposium on Inorganic Insights into Catalysis on the Occasion of the 60th Birthday of Robert Schlögl, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany, July 3–4, 2014.
16. Hydrocarbon species on solid acid catalysts: the good, the bad and the innocent, 2014 Gordon Conference in Catalysis, Colby-Sawyer College, New London, NH, USA, June 22–27, 2014.
17. Short course: IR and UV–vis spectroscopy of solid catalysts in contact with liquids, The 25th Biennial Organic Reactions Catalysis Society Meeting, Tucson, AZ, USA, March 2–6, 2014.
18. Do olefins ru(i)n the show in paraffin isomerization? Northeast Corridor Zeolite Association Meeting, Philadelphia, PA, USA, Dec. 14, 2012.
19. Catching the fish in the hydrocarbon pool, 2011 DOE/BES Catalysis Science Program Meeting "Frontiers in Catalysis at Interfaces and Condensed Media", Annapolis, MD, USA, Oct. 2–5, 2011.

20. Adsorption and conversion of pyrolysis oil compounds, Summer School "Energy and Materials from the Sun", Rolduc Abbey, Kerkrade, The Netherlands, June 20–23, 2011.
21. Kinetic and in situ UV–vis–NIR spectroscopic investigation of *n*-butane isomerization on H-mordenite and Pt/H-mordenite, 17th Rideal Conference, Cardiff, UK, April 19–21, 2011.
22. Acid and bifunctional catalysts for hydrocarbon activation and conversion, Intl. Symposium "Frontiers in Heterogeneous Catalysis", Catalysis Research Center Munich, Germany, Oct. 22–23, 2010.
23. Stabilization of catalytic alkane isomerization, Annual Spring Meeting of the Southwest Catalysis Society, Houston, TX, USA, March 12, 2010.
24. *Plenary lecture*: Alkane conversion on sulfated zirconia and zeolite catalysts, Second IDECAT Conference on Catalysis: "Concepts, Complexity and Diversity in Catalysis", Porquerolles, France, May 31–June 5, 2008.
25. Zirconium oxide – a variable catalyst component, Microelectronics meets Catalysis: Innovative Oxide Materials, Hanse Wissenschaftskolleg HWK at Delmenhorst, Germany, July 20–21, 2006.
26. Effect of cationic promoters on sulfated zirconia catalysts, Science and Art in Europe: Symposium "Catalysis: Nanotechnology with a Past", Berlin, Germany, May 22–24, 2005.
27. In situ vibrational spectroscopy of reactants and probe molecules on oxide catalysts, CECAM Workshop "In situ atomic scale characterization of surfaces under high pressures: recent advances in experiment and theory", CECAM Lyon, France, Nov. 4–6, 2004.
28. Sulfated zirconia catalysts for alkane isomerization: Recent progress, ExxonMobil European Science & Engineering Program (ESEP), European Award Symposium, Machelen, Belgium, Dec. 4, 2003.
29. Charakterisierung von Festkörperoberflächen mit Hilfe von Sondenmolekülen (Characterization of surfaces of solids with the help of probe molecules), 10. Tagung Festkörperanalytik, Vienna, Austria, July 5–7, 1999.
30. *Carl Zerbe Award Lecture*: Reaktionen kurzketziger Alkane, initiiert durch promotierte sulfatierte Zirkonoxide (Reactions of short-chain alkanes, initiated through promoted sulfated zirconias), Vortragsveranstaltung der DGMK-Bezirksgruppen Mitteldeutschland und Berlin-Brandenburg zur Auswertung des 15. Welterdölkongresses in Peking, Berlin-Adlershof, Germany, Jan. 15, 1998.
31. Solid acid catalyzed alkane cracking mechanisms, 3. G.M. Schwab-Symposium, Catalysis for Organic Synthesis, Berlin, Germany, July 6–10, 1997.

RESEARCH INTERESTS AND SUPPORT

1. Current funding

“Designer Hybrid Catalysts for Sustainable Chemical Processing”

\$7,500; Baden-Württemberg - UMass Amherst Joint Research Seed Fund; PI: F.C. Jentoft, foreign partner: R. Anwander (Eberhard-Karls-Universität Tübingen, Germany); July 1, 2025-June 30, 2026

“EAGER IMPRESS-U: Companion Catalysts for Catalyst Regeneration”

\$300,000; NSF CBET #2431966; PI: F.C. Jentoft, foreign partners: N. Shcherban (National Academy of Sciences of Ukraine, funded by NRFU/NAS) and I. Heinmaa (National Institute of Chemical Physics and Biophysics, Tallinn, Estonia, funded by ETAG); Sept. 1, 2024–Aug. 31, 2026

“Advancements in Acid Catalysis through Spectroscopic Analysis of Reaction Networks”

\$600,000; DOE-BES DESC0021041 (Continuation); PI: F.C. Jentoft; Sept. 1, 2023–Aug. 31, 2026

“Solid-Catalyzed Anti-Markovnikov Alkene Hydration”

\$110,000; ACS PRF #66599-ND5; PI: F.C. Jentoft; Sept. 1, 2023–Aug. 31, 2026

“NSF-BSF: Mechanism-Guided Design of Deoxydehydration Catalysts”

\$362,687; NSF CBET #2227945; PI: F.C. Jentoft, foreign partner: O.M. Gazit (Technion – Israel Institute of Technology, Haifa, Israel, funded by BSF); Sept. 1, 2022–Aug. 31, 2026

2. Summary of funding (current and previous)

| <i>Sponsor</i> | <i>Program</i> | <i>Role</i> | <i>\$ Total</i> | <i>\$ FCJ</i> |
|---------------------------------------|--|-------------|-------------------|------------------|
| Deutsche Forschungsgemeinschaft (DFG) | SPP- Priority Program, 2000, 2002, 2004 | Co-PI | 296,300 | 296,300 |
| | Standard grant 2004 + Invitation of researchers grant in 2005 | PI | 99,401 | 99,401 |
| European Union FP6-NMP | Subawards of IDECAT Network of Excellence, 3 in 2005, 1 in 2008 | PI | 163,494 | 163,494 |
| National Science Foundation | Major Research Instrumentation 2009 (w/o cost share) | PI | 440,751 | 154,263 |
| | Major Research Instrumentation 2017 (w/o cost share) | Co-PI | 259,528 | 64,882 |
| | EPSCoR Subaward 2010 & REU 2011, 2012 | PI | 40,000 | 35,000 |
| | Unsolicited CHE 2012, CBET 2012, 2018, 2022 | PI | 1,514,975 | 1,312,758 |
| | EAGER IMPRESS-U 2024 | PI | 300,000 | 300,000 |
| Department of Energy | EPSCoR 2010 & 2013 | Co-PI | 5,640,389 | 849,359 |
| | Subaward of EFRC CCEI (U Delaware) 2014 | Co-PI | 580,000 | 174,000 |
| | DOE-Basic Energy Sciences, Catalysis Science 2020, 2022, 2023 | PI | 1,250,000 | 1,250,000 |
| American Chemical Society | Petroleum Research Fund New Directions 2011, 2018, 2023 | PI | 320,000 | 265,000 |
| Industry | Chevron-Phillips 2012, 2013, 2014, 2015 & 2018, Fresenius 2018, Nippon Kayaku 2019 | PI | 665,000 | 607,500 |
| Other | British Council Global Innovation Initiative Subaward 2015 | PI | 33,005 | 16,503 |
| | Baden-Württemberg - UMass Amherst Joint Research Seed Fund | PI | 7,500 | 7,500 |
| Sum total | | | 11,610,343 | 5,595,960 |

3. Recent (past 10 years) and current international collaborations

Australia: Prof. Karen Wilson, Griffith University; *Belgium:* Prof. Michiel Dusselier, KU Leuven, *Brazil:* Prof. Claudio Mota, Federal University of Rio de Janeiro; *China:* Prof. Tao Zhang, Dalian Institute of Chemical Physics and Prof. Boqing Xu, Tsinghua University; *England:* Prof. Karen Wilson, Aston University, Birmingham; *Estonia:* Dr. Ivo Heinmaa, National Institute of Chemical Physics and Biophysics, Tallinn; *Germany:* Prof. Rainer Anwander, Eberhard-Karls-Universität Tübingen, Prof. Lukas Hintermann, Technische Universität München, Prof. Klaus Köhler, Technische Universität München, Munich; *Israel:* Prof. Oz Gazit, Technion-Israel Institute of Technology, Haifa; *Japan:* Nippon Kayaku; *Ukraine:* Dr. Nataliya Shcherban, National Academy of Sciences of Ukraine.

TEACHING

1. Courses taught at UMass

| <i>Course</i> | <i>Semester</i> | <i>Enrollment</i> | <i>Notes</i> |
|---|--------------------|-------------------|---|
| ChE 325 <i>Thermodynamics II</i> | Spring 2023 | 47 | |
| | Spring 2022 | 43 | |
| | Spring 2020 | 68 | |
| ChE 401 <i>Chemical Engineering Laboratory I</i> | Fall 2020 | 59 (2 sections) | Co-taught, 4 instructors |
| | Fall 2019 | 89 (2 sections) | 5 |
| | Fall 2018 | 97 (2 sections) | 5 |
| | Fall 2017 | 90 (2 sections) | 4 |
| | Fall 2016 | 92 (2 sections) | 4 |
| | Fall 2015 | 102 (2 sections) | 3 |
| ChE 402 <i>Chemical Engineering Laboratory II</i> | Spring 2018 | 69 (2 sections) | Co-taught, 4 instructors |
| | Spring 2017 | 88 (2 sections) | 5 |
| | Spring 2016 | 94 (2 sections) | 5 |
| ChE 625 <i>Chemical Reactor Design</i> | Fall 2024 | 7 | |
| | Fall 2023 | 5 | |
| ChE 613 <i>Catalysis: Fundamentals, Catalyst Synthesis and Characterization</i> | Spring 2025 | 5 | Permanent course in 2024, developed as new course 690C in Spring 2019 |
| | Spring 2024 | 7 | |
| | Fall 2022 | 4 | |
| | Spring 2021 | 7 | |
| | Spring 2019 | 10 | |
| ChE 791F <i>Heterogeneous Catalysis I</i> | Fall, since 2015 | Variable | Group seminar |
| ChE 891A <i>Heterogeneous Catalysis II</i> | Spring, since 2015 | Variable | Group seminar |

2. Course contributions at UMass

| <i>Course</i> | <i>Semester</i> | <i>Instructor</i> | <i>Notes</i> |
|--|-----------------|-------------------|------------------------|
| ChE 555 <i>Concepts in Energy Conversion</i> | Fall 2022 | W.C. Conner | Contributed 2 lectures |
| | Fall 2021 | | 4 |
| | Fall 2019 | | 4 |
| | Fall 2018 | | 5 |
| ChE 290A <i>Introduction to Energy Engineering</i> | Fall 2016 | W.C. Conner | Contributed 2 lectures |
| | Fall 2015 | | 2 |
| ChE 291H <i>Honors Colloquium</i> | Spring 2016 | J.D. Schiffman | Contributed 1 lecture |
| ChE 491A <i>Professional Seminar for Seniors</i> | Fall 2015 | J. Collura | Contributed 1 lecture |
| ENGIN 110 | Fall 2024, 2023 | Perry, Forbes | Short lectures |

3. Courses taught at OU

| <i>Course</i> | <i>Semester</i> | <i>Enrollment</i> | <i>Notes</i> |
|---|-----------------|-------------------|---|
| ChE 3473 <i>Chemical Engineering Thermodynamics</i> | Fall 2013 | 79 | Introduced new book upon department request and developed notes in 2009 |
| | Fall 2011 | 74 | |
| | Fall 2010 | 64 | |
| | Fall 2009 | 47 | |
| ChE 3432 <i>Unit Operations Laboratory</i> | Spring 2014 | 32 (2 sections) | |
| | Spring 2013 | 32 (2 sections) | |
| | Spring 2012 | 20 (1 section) | |
| | Spring 2009 | 16 (1 section) | |
| ChE 4273 <i>Advanced Process Design</i> | Spring 2014 | 8 | Co-supervised 2 groups |
| ChE 5513/ChE 5480 <i>Surface Characterization</i> | Fall 2014 | 6 | New course, developed in Spring 2010 |
| | Fall 2012 | 9 | |
| | Spring 2010 | 10 | |

4. List of courses taught in Germany

31411 PR Experiment *Adsorption Calorimetry*, part of *Physical Chemistry IV/2 Laboratory* for advanced students of Chemistry, developed new experiment, HU Berlin, winter 2001/02, 02/03, 04/05, 05/06, 07/08
31307 UE *Physical Chemistry I/2, Chemical Thermodynamics of Mixed Phases*, conducted exercise class and designed tests, HU Berlin, Summer 2002
31305 UE *Introduction to Physical Chemistry for students of Chemistry*, conducted exercise class and designed tests, HU Berlin, winter 2001/02
31455 *Thermal Analysis and Calorimetry* for advanced and graduate students of Chemistry, developed new course, HU Berlin, Summer 2001
31312 PR *Physical Chemistry Laboratory* for students of Chemistry, winter 2000/01
31312 PR *Physical Chemistry Laboratory* for students of Biology and Biophysics, HU Berlin, Summer 2000, 2001
0582 09S *Surface Chemistry of Heterogeneous Catalysts* for advanced (7th/8th semester) students of Chemistry, TU München, winter 2000/01
Physical Chemistry Laboratory for advanced students of Chemistry, LMU München, winter 1993/94

5. Lecture series, summer schools, workshops - organization and contributions

Workshop: *IR and UV-vis Spectra of Solid Catalysts: Measurement & Interpretation*, lecturer, Technion, Dec. 6 & 8, 2021.
ACS Catalysis Division Educational Seminar Series *From Basics to Applications of Catalysis*, lead organizer, Fall 2020, Summer 2021 & Fall 2021.
Lecture series *Modern Methods in Heterogeneous Catalysis Research*, curriculum, organization, and lecturer, FHI, HU Berlin, TU Berlin, winter 2002/03 – winter 2008/09, every winter semester
Block course of the International Max Planck Research School *Complex Surfaces in Materials Science*, lecturer, winter 2005/06, winter 2006/07 – Summer 2008, every semester, FHI, HU & FU Berlin
Central German Catalysis Teaching Association (Mitteldeutscher Katalyseverbund), lecturer, University of Leipzig, winter 2006/07, winter 2007/08
Organization of a one week-long Fall school *From Single Crystals to Real Catalysts*, Fritz Haber Institute, 1999

6. Teaching awards

2nd Prize for Course Instructors, University of Oklahoma, College of Engineering Dean's Office Centennial Competition, Spring 2010

7. Outreach and activities to broaden participation

UMass College of Engineering Engineering's RISE Scholars Program; developed and oversaw an activity for early-arrival engineering Freshman students, together with one of the Department's lecturers. RISE stands for Revolutionary, Inclusive, Sustainable Engineering. The RISE Program is meant to facilitate the transition to college. For the activity around the theme of "Separations", experimental protocols were developed. The students spend 2.5 hours in the Chemical Engineering undergraduate laboratory spaces and rotate through hands-on activities, demonstrations, and a tour of some of the teaching laboratory's stations. First offered in Aug. 2023, for 28 participants; Aug. 2024, 34 participants and Aug. 2025, 25 participants.
Women in Engineering Day for High School Girls: Gave lab tour and explained research, Oct. 2022, Oct. 2019, Oct. 2016
Transfer Student Experience Panel (Panelist), Oct. 2020
Oklahoma Women in Science Conference; Jentoft's group operated booth with "hands-on science" and poster display for female middle and high school students, Feb. and Oct. 2011 and Oct. 2012
EPSCoR Bioenergy Focus 2010, video explaining catalyst development for biomass conversion to fuels and chemicals, see <http://www.youtube.com/watch?v=HqJVx9o2mVE>
Participated in video "Exploring Oklahoma's Green Energy" 2009
<http://www.youtube.com/watch?v=yY47YePo44M>
Cooperation with the Gymnasium Athenaeum (high school) in Stade, Germany. Formulated proposal "*Nitrate concentration mapping in the Elbe estuary ecosystem*" and obtained funding within IDECAT (a European excellence network in catalysis), students conducted project under supervision of their teacher; results were presented by the high school students in the form of a poster at the open house day of the Fritz Haber Institute in June 2008, May–June 2008.

ADVISING, MENTORING AND HOSTING

1. Postdoctoral researchers

Department of Chemical Engineering, UMass Amherst

Jincy Joseph, May 2015–April 2016

School of Chemical, Biological and Materials Engineering, OU Norman

Zhimin Liu, Jan. 2011–May 2015

Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany

Giulio Lolli, Kristina Chakarova, Tzvetomir Venkov, Katrin Pelzer, Samer Vijay, Annette Trunschke, Genka Tzolova Müller, Raimund Horn, Xiaobo Yang, Sabine Wrabetz, Patricia Concepción-Heydorn, Chunjuan Jia, Arnaud Sauvage

2. Ph.D. and Master's theses completed and in progress (committee chair)

Department of Chemical Engineering, UMass Amherst

Noah S. Hunter, Doctoral thesis, Aug. 2024–present

Bhushan Murjani, Doctoral thesis, Aug. 2023–present

Richard Morgan Whitfield III, Doctoral thesis, Aug. 2021–present

Dipti Bhawe, Doctoral thesis, Aug. 2020–Sept. 2025, Ph.D. 2025

Isaac O. Ogabiela, Doctoral thesis, Aug. 2019–April 2025, Ph.D. 2025

Juili D. Parab, Doctoral thesis, Aug. 2017–March 2023, Ph.D. 2023

Aditya A. Rane, M.S. thesis, Aug. 2019–Aug. 2021, M.S. 2021

Eric D. Hernandez, Doctoral thesis, Aug. 2015–Aug. 2021, Ph.D. 2021

Bryan E. Sharkey, Doctoral thesis, Aug. 2014–Feb. 2020, Ph.D. 2020

Koushik Ponnuru, Doctoral thesis, Aug. 2014–May 2019, Ph.D. 2019

School of Chemical, Biological and Materials Engineering at OU Norman

Ph.D. theses: Ali Mehdad (2015), Matthew J. Wulfers (2013)

M.S. theses: Kelsey C. Potter (2015), Alana L. Denning (2014), Chandramouli Vaddepalli (2012), ThuHuong Ngo (2011)

Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany (co-supervised)

Doctoral Theses: Nicole Giliard (TU Berlin, 2011), Jens Hohmeyer (TU Darmstadt, 2009), Carine Chan Thaw (TU Berlin and ULP Strasbourg, 2008), Rhys Lloyd (FU Berlin, 2008), Barbara S. Klose (TU Berlin 2005), Raimund Horn (TU Berlin 2003), Rafad Ahmad (FU Berlin 2003), Armin Fischer (TU Berlin 2001)

Master's Theses and "Diplomarbeit": Pradnya Joshi (FU Berlin 2005), Barbara S. Klose (TU München 2001), Jutta Kröhnert (TFH Berlin 1999)

3. Awards and recognition for students (extramural)

Dipti M. Bhawe, Richard J. Kokes Travel Award of the North American Catalysis Society, 2025

Dipti M. Bhawe, AIChE Women in Chemical Engineering Travel Award, 2024

Isaac O. Ogabiela, Dipti M. Bhawe, R. Morgan Whitfield III, North American Catalysis Society Travel Awards to the 18th International Congress on Catalysis in Lyon, France, July 14-19, 2024

Isaac O. Ogabiela, Richard J. Kokes Travel Award of the North American Catalysis Society, 2023

Dipti M. Bhawe, 3rd place poster competition, New England Catalysis Society Meeting, Sept. 29, 2023

Isaac O. Ogabiela, AIChE Catalysis and Reaction Engineering Division Student Travel Grant Award, 2023

Dipti M. Bhawe, ACS CATL ChemCatBio Travel Award, 2023

Isaac O. Ogabiela, Richard J. Kokes Travel Award of the North American Catalysis Society, 2023

Juili D. Parab, Richard J. Kokes Travel Award of the North American Catalysis Society, 2022

Eric D. Hernandez, AIChE Catalysis and Reaction Engineering Division Student Travel Grant Award, 2019

Eric D. Hernandez, Richard J. Kokes Travel Award of the North American Catalysis Society, 2019

Bryan E. Sharkey, ACS CATL Division, Graduate Student Travel Award, ACS Spring Meeting, 2019

Koushik Ponnuru, AIChE Catalysis and Reaction Engineering Division Student Travel Grant Award, 2018

Koushik Ponnuru, Richard J. Kokes Travel Award of the North American Catalysis Society, 2017

Alana L. Denning, Student Poster Award, Southwest Catalysis Society, 2014 Spring Symposium, Rice University, Houston, 2014 (5 awards given among 32 posters)
Matthew J. Wulfers, GSAS Scholarship to participate in the Session on Catalysis and Materials for Hydrocarbon Conversions in Doha, Qatar, 2013
Matthew J. Wulfers, NSF PIRE scholarship to participate in Summer School “Energy and Materials from the Sun”, Kerkrade, The Netherlands, 2011
Chandramouli Vaddepalli, Richard J. Kokes Travel Award of the North American Catalysis Society, 2011
Matthew J. Wulfers, 1st Prize Graduate Student Poster Award, 55th Pentasectional Meeting of the American Chemical Society, Norman, OK, USA, 2010
Barbara S. Klose, 3rd Prize in the 2006 Shell-She-Study Award competition

4. Undergraduate research

Honors Theses, UMass Amherst

Veronika Dubovis, ChE 499Y/T, Fall 2025/Spring 2026 (chair)
Graeme Sullivan, PHYS 499Y/T, Fall 2025/Spring 2026 (committee member)
Luke Joseph, ChE 499YT, Fall 2023/Spring 2024 (chair)
Alexander Marshall, ChE 499Y/T, Fall 2021/Spring 2022 (chair)
Gillian R. Binley, ChE 499Y/T, Fall 2019/Spring 2020 (chair)
Armando Carvalho, ChE 499Y/T, Fall 2018/Spring 2019 (chair)
Abdul Mughis Paracha, 2018/19 (committee member)

Independent Study, UMass Amherst

John Terhune, ChE296ISH, Fall 2025
Joe Martineau, ChE 496, Spring 2025
Rayyan Khan, ChE 396, Spring 2025
Alexander Bologov, ChE 396, Fall 2024, Spring 2025
Hunter Brassard, ChE 396, Spring 2024
Luis Mijares Moreno, ChE 296, Spring 2023 and ChE 396, Fall 2023 & Spring 2024
Alexander Marshall, ChE 396ISH, Spring 2021
Gillian R. Binley, ChE 396, Spring 2019
Armando Carvalho, ChE 396ISH, Spring 2018
Shuaib Balogun ChE 396, Fall 2016
John E. Lyons, ChE 496, Fall 2015

Honors Research and other research experiences, OU Norman

Lydia George, ChE 4980 Honors Research, Fall 2014
Travis Herrian, research assistant (hourly), Summer 2014
Connor W. Beckerle, ChE 3980 Honors Research Spring 2014 and research assistant (hourly), Summer & Fall 2014
Austin Donnell, research assistant (hourly), Summer 2013 and Spring 2014
Kevin E. Buettner (B.S. Sp. 2013), research assistant (hourly), Summer 2013
Mackenzie J. Carder, research assistant (hourly) Spring 2013, ChE 4980 Senior Research Fall 2013
John T. Grinde, Program of Excellence Scholarship Spring 2013 & Fall 2014, ChE 3980 Honors Research Fall 2013
Bryce A. Hansard, Program of Excellence Scholarship Spring 2013 and Fall 2013
Lauren C. Gilbert, ChE 3980 Honors Research Fall 2012, Program of Excellence Scholarship Spring & Summer & Fall 2013
Grant E. Loveall, ChE 4980 Senior Research Fall 2012
Matthew G. Wallace, Summer REU 2012, ChE 4980 Senior Research Fall 2012
Nicholas R. Luedtke, ChE 3990 Undergraduate Research Experience Summer & Fall 2011
Alana L. Denning, Summer REU 2011, ChE 3990 Undergraduate Research Experience Fall 2011 & Spring 2012
Blake A. Myrick, ChE 3980 Honors Research Spring 2011
Katlin D. Robinson, ChE 3980 Honors Research Fall 2010

ACADEMIC SERVICE & PROFESSIONAL ACTIVITIES

1. Offices and committees at UMass/OU

University – committee membership by appointment

Institutional Chemical Safety Committee, March 2016–present; committee reviews standard operation procedures and performs annual review of UMass Chemical Hygiene Plan; FCJ drafted the University’s “Shared Laboratory Spaces Guidelines” (effective from 2022)
EH&S External Review Committee, Dec. 2019–March 2020 (discontinued during pandemic)
Provost’s Advisory Committee for Classrooms, Aug. 2013–Dec. 2014
Faculty Appeals Board, Aug. 2013–Dec. 2014

College – Standing committees

Elected Member, College Personnel Committee, AY 2023/2024, AY 2022/2023, Spring 2022, AY 2019/2020

College – Search committees

Department Head Search Committee, 2014–2015
Director for OU’s Advanced Radar Research Center (ARRC) Search Committee, 2014

College – Other service assignments

Task Force to evaluate the College’s Strategic Plan, March-May 2025
College of Engineering Junior & Senior Awards Committee, AY 2024/2025, AY 2021/2022, AY 2014/2015
Materials Science & Engineering Program Task Force, 2019–2021
Dean Evaluation Committee, 2013

Department – Standing committees

Elected Member, Department Personnel Committee, AY 2024/2025, AY 2015/2016
Elected Member and Chair, Department Personnel Committee, AY 2017/2018, AY 2016/2017
Graduate Program Committee, AY 2024/2025, AY 2023/2024, AY 2022/2023, Spring 2022
Undergraduate Program Committee, AY 2024/2025, AY 2016/2017, Spring 2015

Department – Search committees

Chair, Tenure Track Assistant Professor Faculty Search Committee, AY 2024/2025
Member, Academic Adviser Search Committee, AY 2022/2023
Member, Assistant Professor Faculty Search Committee, AY 2017/2018
Chair, Open Rank Faculty Search Committee, March 2016–May 2017
Member, Assistant Professor Faculty Search Committee, Department of Chemistry, AY 2017/2018
Member, CBME Faculty Search Committee, 2013

Department – Other service assignments

Graduate Admission Committee, AY 2015/2016–AY 2023/2024
PPG Fellowship Selection Committee, Nov. 2024
Best Dissertation Selection Committee, AY 2023/2024
Student Professional Development Committee, AY 2021/2022
External Awards Committee, AY 2020/2021
Department Leadership Committee, Summer 2016 (Chair: J. Klier)
Coordinator of seminar series, School of Chemical, Biological and Materials Engineering, Aug. 2011–Dec. 2014
Member, Ad-hoc committee for Organic Chemistry sequence in the Chemical Engineering curriculum, 2011
Member, Ad-hoc committee for Physical Chemistry classes in the Chemical Engineering curriculum, 2011
ABET Student Outcomes Committee: Outcomes (e) an ability to identify, formulate, and solve engineering problems (Lead) and (g) an ability to communicate effectively, 2009–2014
ABET Course Outcomes Committee: CHE 3473 Chemical Engineering Thermodynamics (Lead), CHE 3333 Separations, CHE 3432 Unit Operations Laboratory, 2009–2014

Extramural

Scientific Advisory Board, Center for Environmentally Beneficial Catalysis, University of Kansas (2022–present, 2023: Vice Chair, 2024: Chair)

Selection Committee for endowed professorship, School of Chemical, Biological & Materials Engineering, University of Oklahoma, Norman, 2022

Executive Committee, NSF EPSCoR Research Infrastructure Improvement Plan “Building Oklahoma’s Leadership Role in Cellulosic Bioenergy”, Member, Dec. 2009–2014

2. Offices and committees at Fritz Haber Institute

Strategic Committee of the Max Planck Society, tasks: devise strategy for restructuring of a Max Planck Institute in the field of Chemistry, define research field, and identify candidates for future directors, 2007–08

Search Committee for Independent Junior Research Group Leaders in the Chemistry, Physics and Technology Section of the Max Planck Society, 2007 & 2008

Elected Representative of the Scientific Employees of the Fritz Haber Institute at meetings of the Chemistry, Physics and Technology Section of the Scientific Council of the Max Planck Society, July 2006–Sept. 2008

Elected Ombudsperson at the Fritz Haber Institute, July 2006–Sept. 2008

Department of Inorganic Chemistry Liaison Officer and Lecturer, International Max Planck Research School Complex Surfaces in Materials Science at Fritz Haber Institute, Humboldt-Universität zu Berlin, and Freie Universität Berlin, 2002–2008

3. Scientific publishing

Editor of *Advances in Catalysis* 2014–2015, Editor together with Bruce C. Gates 2012–2013, Associate Editor together with Bruce C. Gates and Helmut Knözinger 2008–2011. *Advances in Catalysis* is a book series with reviews in the field of catalysis, published by Academic Press Inc. Elsevier Science. In the years 2008–2015, *Adv. Catal.* was consistently ranked as a Q1 journal in the category “Chemistry, Physical.”

Guest Editor (together with Gerhard Mestl), *Topics in Catalysis*, 2017 (see Publications, edited journal issues)

Guest Editor (together with Helmut Knözinger), *Topics in Catalysis*, 2011 (see Publications, edited journal issues)

Member of the International Advisory Board of *ChemCatChem*, 2013–2016

Member of the Editorial Board of *Applied Catalysis A: General*, 2007–2010

4. Reviewer functions (2009-present)

International Journals: Accounts of Chemical Research, ACS Catalysis, Advanced Materials, Advanced Synthesis & Catalysis, Angewandte Chemie, Applied Catalysis A: General, Applied Catalysis B: Environmental, Catalysis Communications, Catalysis Letters, Catalysis Science & Technology, Catalysis Today, Catalysts, ChemCatChem, ChemElectroChem, Chemical Communications, Chemical Engineering Journal, Chemical Engineering Science, Chemistry A European Journal, Chemistry of Materials, ChemNanoMat, ChemSusChem, Green Chemistry, Industrial & Engineering Chemistry Research, International Journal of Chemical Kinetics, Journal of the American Chemical Society, Journal of Catalysis, Journal of Hazardous Materials, Journal of Molecular Catalysis, Journal of Physical Chemistry, Journal of Physical Chemistry Letters, Materials Chemistry and Physics, Microporous and Mesoporous Materials, Molecular Catalysis, Molecular Physics, Nature Catalysis, Nature Communications, Physical Chemistry Letters, Surface Science, Thermochemica Acta, Topics in Catalysis

Funding Agencies USA: National Science Foundation CBET and CHE Divisions unsolicited, CAREER, SBIR, STC/CCI center and DMREF proposals (panel member 2008, 2010–2014, 2016–2025, and ad hoc reviewer 2010–2013, 2015, 2017, 2025); Department of Energy Basic Energy Sciences, open and special FOAs, SBIR/STTR, EFRC, and CAREER proposals, National Laboratory review (2012, 2019–2025); American Chemical Society Petroleum Research Fund (2012–2015, 2017, 2018–2022)

Funding Agencies international: Deutsche Forschungsgemeinschaft (Germany); Agence Nationale de la Recherche (France); Swiss National Science Foundation (Switzerland); The Netherlands Organisation for Scientific Research (The Netherlands); Czech Science Foundation (Czech Republic); Marsden Fund - The Royal Society (New Zealand); Austrian Science Fund (Austria); European Research Council

Conferences: CATBIOR – International Congress on Catalysis for Biorefineries 2017, 2019; International Congress on Catalysis 2016, International Zeolite Conference 2016, North American Catalysis Society Meeting 2011, 2013, 2015, 2017, 2019, 2022, 2025 including Kokes Awards; International Symposium on Acid–Base Catalysis 2013, 2017

5. Funding agency consulting

Member: NSF CBET Division Director Search, Canvassing Committee, 2021

Participant: DOE–NIST Materials Genome Initiative Grand Challenges Workshop, sector Catalysts, Rockville, MD, June 25–26, 2013

Participant: Workshop on priorities and directions for the NSF Chemical Catalysis Program, Denver, CO, Aug. 26–27, 2011

6. Conference organization

Member, Scientific Committee for the 6th International Congress on Catalysis for Biorefineries (CATBIOR), Dalian, China, April 25–29, 2026

Member, Committee for scientific topic “Acid-Base Catalysis”, 18th International Congress on Catalysis, Lyon, France, July 14–19, 2024

Co-chair, Technical Program Committee, North American Catalysis Society Meeting, Providence, RI, USA, June 18–23, 2023

Member, Technical Program Committee, North American Catalysis Society Meeting, New York, NY, USA, May 22–27, 2022

Co-organizer and Co-chair, Symposium “Fundamental Insights in Catalytic Chemistry through Precisely Synthesized Materials: A Symposium Honoring Bruce C. Gates” ACS Spring Meeting, San Diego, CA, USA, March 20–24, 2022

Member, Scientific Committee of the 5th International Congress on Catalysis for Biorefineries, Turku, Finland, Sept. 23–27, 2019

Co-organizer, ACS symposium “Frontiers in Catalysis for Energy and Sustainability” on behalf of ACS Catalysis Division (CATL), 257th ACS National Meeting and Exposition, Orlando, FL, USA, March 31–April 4, 2019.

Member, International Committee for the 4th International Congress on Catalysis for Biorefineries (CATBIOR), Lyon, France, Dec. 11–15, 2017

Member, Scientific Committee of the 18th International Zeolite Conference, Rio de Janeiro, June 19–24, 2016

Co-organizer and Co-chair, Session on "Catalytic biomass conversion to chemicals," 2013 AIChE Annual Meeting, San Francisco, CA, USA, Nov. 3–Nov. 8, 2013

Co-organizer and Co-chair: Session on "Catalytic biomass conversion to chemicals," 2012 AIChE Annual Meeting, Pittsburgh, PA, USA, Oct. 28–Nov. 2, 2012

Member: Scientific Advisory Panel for the 4th International Congress on Operando Spectroscopy - Recent Developments and Future Perspectives in Spectroscopy of Working Catalysts, Brookhaven National Laboratory, Upton, NY, USA, April 29–May 3, 2012

Co-organizer and Co-chair: Session on "Catalytic biomass conversion to chemicals," 2011 AIChE Annual Meeting, Minneapolis, MN, USA, Oct. 16–21, 2011

Co-organizer and Co-chair: Session on “Analytical and General Chemistry,” 56th Pentasectional Meeting of the American Chemical Society, Bartlesville, OK, USA, March 12, 2011

Co-organizer and Co-chair: Session on “Catalytic biomass conversion to chemicals,” 2010 AIChE Annual Meeting, Salt Lake City, UT, USA, Nov. 7–12, 2010

Co-organizer and Co-chair: Session on “Catalytic conversion of oxygenates,” 2009 AIChE Annual Meeting, Nashville, TN, USA, Nov. 8–13, 2009

Conference Adviser, 6th World Congress on Catalysis by Acids and Bases, Genova, Italy, May 10–14, 2009; Co-organizer and Co-chair: Session on “Modified oxides”

7. Functions in societies and organizations

Elected Member at Large, ACS Catalysis Division Executive Committee, 2019-2021 (3 years) and Chair of ACS CATL Division Educational Committee (2020); launched inaugural ACS CATL Division Educational Seminar Series in Fall 2020

Member, ACS Catalysis Division Adhoc Award Committee, 2018–2022

Elected President (2009–2013) and Member (2005–2013) of the *Acid-Base-Catalysis Board of Directors*; the Board organizes the “International Symposium on Acid-Base Catalysis (ca. 200 participants in 2009, ca. 250 in 2013), and administers the *Tanabe Prize* and a Young Scientist Award (established during this presidency)