

CURRICULUM VITAE

Enrique Iglesia

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BIRTH DATE: August 27, 1954, Havana, Cuba

EDUCATION: Ph.D., Chemical Engineering, 1982; Stanford University

(Advisor: Professor Michel Boudart)

Dissertation: "Catalytic and Temperature-Programmed Decomposition of Formic Acid on Copper, Nickel, and Copper-Nickel Alloys"

Master of Science, Chemical Engineering, 1979; Stanford University

Bachelor of Science, Chemical Engineering, 1977; Princeton University
summa cum laude (Highest ranking graduate in School of Engineering and Applied Sciences) Thesis: "*The Permeation of Hydrogen Isotopes through Stainless Steels*"

PROFESSIONAL EXPERIENCE:

Theodore Vermeulen Chair in Chemical Engineering (2009-date)

Chancellor Professor (2006-2009)

Professor of Chemical Engineering (1993-date)

Director, Berkeley Catalysis Center (2006-2015)

College of Chemistry, University of California at Berkeley

Physical Sciences Division, Pacific Northwest National Laboratory

U.S. Department of Energy; Laboratory Fellow (2019-date)

Chemical Sciences Division, E.O. Lawrence Berkeley National Laboratory

U.S. Department of Energy; Faculty Senior Scientist (1993-2019)

Exxon Research and Engineering Co., Corporate Research Laboratories

Research Associate; Section Head, Catalysis Science (1982-1993)

Stanford University

Consulting Professor of Chemical Engineering (1988-1993)

HONORS AND AWARDS

Academies and Honorary Degrees

Doctor Honoris Causa, Technical University of Munich (2018)
Fellow, National Academy of Inventors (2016)
Member, American Academy of Arts and Sciences (2015)
Honorary Fellow, Chinese Chemical Society (2013)
Member, National Academy of Engineering (2008)
Doctor Honoris Causa, Universidad Politecnica de Valencia (2007)
Honorary Professor, Universidad Nacional del Litoral (Argentina) (2006)

Research

E.V. Murphree Award for Industrial and Engineering Chemistry, American Chemical Society (2020)
Michel Boudart Award for the Advancement of Catalysis, North American Catalysis Society and European Federation of Catalysis Societies (2019)
William H. Walker Institute Award for Excellence in Contributions to Chemical Engineering Literature, American Institute of Chemical Engineers (2018)
Fellow, American Institute of Chemical Engineers (2014)
Fellow, Japan Society for the Promotion of Science (2013)
ENI Prize, New Frontiers in Hydrocarbons (2012)
Gabor Somorjai Award for Creative Research in Catalysis, American Chemical Society (2012)
Francois Gault Lectureship Award, European Federation of Catalysis Societies (2011)
Alpha Chi Sigma Institute Award, American Institute of Chemical Engineers (2011)
Cross Canada Lectureship Award, Chemical Institute of Canada (2011)
Fellow, American Chemical Society (2010)
Tanabe Prize in Acid-Base Catalysis (2009)
Humboldt Senior Scientist Research Award, Alexander von Humboldt Foundation (2007)
Robert Burwell Lectureship Award, North American Catalysis Society (2006)
George A. Olah Award in Hydrocarbon Chemistry, American Chemical Society (2005)
Award for Excellence in Natural Gas Conversion (2004)
Richard H. Wilhelm Institute Award in Chemical Reaction Engineering, American Institute of Chemical Engineers (2003)
Paul Emmett Award in Fundamental Catalysis; North American Catalysis Society (1997)
Award for Excellence in Catalysis and Eminent Visitor Award, Chemical Society of South Africa (1998)
1992 Golden Tiger Award (Annual Exxon Award for: “Inspirational Leadership and Outstanding Contributions in Catalytic Science and Technology”)
Silver Medal of the Royal Society of Arts (1977, highest-ranked graduating senior in the Schools of Engineering and Architecture, Princeton University)
Phi Beta Kappa (1977); **Tau Beta Pi** (1976; Princeton Chapter President, 1976-77)

Teaching

Best Teacher Award, College of Chemistry, University of California at Berkeley (2010)
Donald Sterling Noyce Prize for Excellence in Undergraduate Teaching, University of California (2005) (highest teaching award in the physical sciences at Berkeley)
Best Teacher Award, Berkeley Chapter, American Institute of Chemical Engineers (1999)
AIChE Award for Chemical Engineering Excellence in Academic Teaching (California Chapter) (1995-96)

LECTURESHIPS AND PROFESSORSHIPS

2021 Pregl Colloquium Lecturer, National Institute of Chemistry, Slovenia (2021)
BASF Distinguished Lecturer, Wayne State University (2020)
Holtz Lecturer, Johns Hopkins University (2020)
Neil Armstrong Distinguished Visiting Professorship, Purdue University (2018)
Wolfgang Sachtler Inaugural Lecturer, Northwestern University (2017)
T.W. Leland Lecturer, Rice University (2017)
Eastman Chemicals Lecturer, University of Virginia (2016)
UCR Distinguished Lecturer, University of California-Riverside (2016)
Cary Lecturer, Georgia Institute of Technology (2015)
Lanning Distinguished Lecturer, Washington State University (2015)
Lowrie Lecturer, Ohio State University (2015)
Richard H. Wilhelm Lecturer, Princeton University (2014)
Kelly Lecturer, Purdue University (2014)
Gaden Lecturer, Columbia University (2013)
Dow Lecturer, Carnegie Mellon University (2013)
Xingda Lecturer, Peking University (2013)
Vladimir Haensel Lecturer, UOP (2013)
Wohl Lecturer, University of Delaware (2012)
Fellow, Technical University of Munich, Institute for Advanced Studies (2012)
David Mason Lecturer, Stanford University (2012)
UOP Invitational Lecturer, UOP (2011)
Sussman Lecturer, Tufts University (2010)
William Flowers Hand Lecturer, Mississippi State University (2010)
ExxonMobil Lecturer, University of Massachusetts (2009)
Distinguished Lindsay Lecturer, Texas A&M University (2009)
Hess Lecturer, University of Virginia (2009)
Texas Distinguished Faculty Lecturer, University of Texas-Austin (2008)
Pfizer Lecturer, Purdue University (2007)
Sasol Lecturer, University of Ottawa (2006)
Honorary Professor, Universidad Nacional del Litoral, Santa Fe, Argentina (2005)
V.N. Ipatieff Professorship, Northwestern University (2004/2005)
Wilhelm Manchot Chemistry Professorship, Technical University of Munich (2004)
Hwa-Ying Visiting Scholar, Nanjing, Xiamen, and Tsinghua Universities, China, 2001
Harry G. Fair Memorial Lecture, University of Oklahoma (2000)

Distinguished Lecturer, Departments of Applied Chemistry and Chemical Engineering, University of Toronto (1999)

UOP Invitational Lecturer, UOP (1998)

Visiting Professor, CONICET Distinguished Lecturer, Universidad Nacional del Litoral, Santa Fe, Argentina (1994)

Consulting Professor of Chemical Engineering, Stanford University (1988-1993)

SERVICE TO PROFESSIONAL SOCIETIES

Chemical Engineering in the 21st Century, National Academies Studies Report, Panel/Committee Member (2020-2021)

17th International Congress on Catalysis, Meeting Chair (2020)

DOE Basic Research Needs: Catalysis, Panel Chair (2017-2018)

11th International Congress on Catalysis, Executive Organizing Committee and Program Co-Chair (1996)

6th International Natural Gas Conversion Symposium, Meeting Co-Chair and Technical Program Chair (2001)

7th International Natural Gas Conversion Symposium, Technical Program Chair (2004)

National Academy of Engineering

Chair, Section 3 (2020)

Vice Chair, Section 3 (2019)

Chair, Canvassing Committee (2018)

Vice Chair, Canvassing Committee (2017)

Section 3 Peer Committee (2011-2014)

International Association of Catalysis Societies

Vice-President (2016-2020)

President (2020-2024)

Meeting Chair, International Congress on Catalysis (2016-2020)

North American and Catalysis Society

President (2009-2017)

Vice-President (2005-2009)

California Catalysis Society Representative to National Society (1999-2005)

Meeting Co-Chair; 2009 North American Meeting of the Catalysis Society (2009)

American Institute of Chemical Engineers

Director, Catalysis and Reaction Engineering Division (1997-2001)

Awards Committee Chair, Catalysis and Reaction Engineering Division (1998-99)

Walker, Alpha Chi Sigma, Colburn, Wilhelm Award Sub-Committees (1997-date)

American Chemical Society

Chairman, Division of Petroleum Chemistry (1995-96)

Chairman-Elect and Program Chairman, Division of Petroleum Chemistry (1994)

Chairman, Program Committee, and Member, Executive Committee, Division of

Petroleum Chemistry (1991-1993); Coordinator, Catalysis Symposia, Division of Colloid and Surface Chemistry (1991-1993); Delegate, Catalysis Secretariat (1992-1997); Member, Long Range Planning Committee, Petroleum Chemistry (1995-1998).

EDITORIAL ACTIVITIES

Editor-in-Chief, **Journal of Catalysis** (1997-2010)

Associate Editor, “**Encyclopedia of Catalysis**” Wiley (2002) (2003 Award for Best Multi-Volume Reference from the Association of American Publishers)

Guest Editor, **Topics in Catalysis**, Vol. 2 (1995)

Editor, “Synthesis and Properties of Advanced Catalytic Materials,” **Materials Research Society Symposium Proceedings** (Iglesia, E., Lednor, P.W., Nagaki, D., and Thompson, L.T. Eds.) , Vol. 368 (1995)

Editor, **Proceedings of the 11th International Congress on Catalysis; Studies in Surface Science and Catalysis** (Hightower, J.W., Delgass, W.N., Iglesia, E., and Bell, A.T., Eds.), Academic Press (1996)

Editor, **Proceedings of the 6th Natural Gas Conversion Symposium: Studies in Surface Science and Catalysis** (Iglesia, E., Spivey, J.J., and Fleisch, T.H., Eds.), Elsevier (2001)

Editorial Advisory Board, **Encyclopedia of Nanoscience and Nanotechnology**, Marcel Dekker (2003)

Editorial Advisory Boards

Journal of Catalysis (2010-date)

Advances in Catalysis (2007-date)

Journal of Energy Chemistry (2012-date)

Catalysis Book Series, Royal Society of Chemistry (2007-date)

Catalysis Monograph Series (Imperial College Press) (2001-date)

Catalysis Surveys (Japan) (1998-date)

Industrial Catalysis News (1998-2001)

Catalysis Today (1993-1998)

Energy and Fuels (1997-2001)

CONSULTING AND ADVISORY ACTIVITIES

Advisory Board, **Norwegian National Catalysis Institute** (2017-date)
Member, **ENI Prize Selection Committee** (2015-date)
International Technology Advisory Board, **World Gold Council** (2010-date)
Fachbeirat, **Fritz Haber Institute, Max Planck Gesellschaft** (2005-2012)
Technology Advisory Council, **BP p.l.c** (2007-2014)
Advisory Board, College of Engineering, **Stanford University** (2010-date)
Scientific Advisory Board, **Nanostellar, Inc.** (2004-2009)
Scientific Advisory Board, **Range Fuels.** (2006-2010)
Senior Scientific Advisor, **Catalytica, Inc.** (1995-2001)
Senior Scientific Advisor, **Catalytica Advanced Technologies** (1997-2001)
Senior Scientific Advisor, **Catalytica NovoTec** (1999-2002)
Consultant: **BP, ExxonMobil, Nanogap, Vertellus, Nanostellar, Novodynamics, Novotec, Catalytica Energy Systems, Range Fuels, UPM, Honeywell/UOP**
Advisory Board, **International Conference on Environmental Catalysis** (2000-date)
Advisory Board, **Natural Gas Conversion Symposium** (1996-2010); Chair (2005-2010)
International Scientific Board, **International Congress on Catalysis** (1998-date)
International Scientific Board, **“Oxide-Based Catalysts at the Crossroads of Chemistry”**, Como Conference, Como, Italy, October 8-11, 2000
National Research Council Standing Committee, U.S. Department of Energy Vision 21 Research and Development Program (2002-date)
International Advisory Board, **World Congress on Oxidation Catalysis** (2003-date).
Scientific Advisory Board, **International Symposium Acid-Base Catalysis** (2002-date)
Advisory Board, **Asia Pacific Catalysis Conferences** (1997-date)

BIOGRAPHICAL NOTE

Enrique Iglesia

Enrique Iglesia received a B.S. from Princeton University (1977, summa cum laude) and a Ph.D. from Stanford University (1982) in Chemical Engineering, with Professor Michel Boudart as his mentor and in the areas of catalysis and chemical reaction engineering. In 1993, he joined the University of California at Berkeley as Professor of Chemical Engineering, after twelve years of research and management experience at the Exxon Corporate Research Laboratories, where he ultimately became the Head of Catalysis Research with stewardship responsibility for the deployment of catalytic technologies in the downstream and chemicals sectors of the Exxon Corporation. He currently holds the Theodore Vermeulen Chair in Chemical Engineering at the University of California at Berkeley and the distinction of Laboratory Fellow at the Pacific Northwest National Laboratory of the U.S. Department of Energy. He previously held the position of Faculty Senior Scientist at the E.O. Lawrence Berkeley National Laboratory until 2019. He has served as the Editor-in-Chief of the Journal of Catalysis (1997-2010), as the Founding Director of the Berkeley Catalysis, as President of the North American Catalysis Society (2009-2017) and is the current Vice-President and President-Elect of the International Association of Catalysis Societies. He is also the Chair of the Chemical Engineering Section of the National Academy of Engineering, an organization that he has served since 2008 in several leadership positions. He has co-chaired the 2001 Natural Gas Conversion Symposium, the 2009 North American Meeting of the Catalysis Society and is the Meeting Chair for the 2020 International Congress on Catalysis, the premier world-wide gathering of academic and industrial researchers in the field of catalysis.

Professor Iglesia is a member of the National Academy of Engineering, the highest national distinction conferred upon an engineer. He has also been elected to the American Academy of Arts and Sciences and the National Academy of Inventors. He is a Fellow of the American Chemical Society and the American Institute of Chemical Engineers, as well as one of the fewer than 100 scientists worldwide to be named Honorary Fellow of the Chinese Chemical Society. He has received a Senior Scientist Award from the Alexander von Humboldt Foundation and a Doctor Honoris Causa degrees from the Universidad Politecnica de Valencia and the Technical University of Munich. His research has been recognized with the George A. Olah Award in Hydrocarbon Chemistry, the Gabor Somorjai Award for Creative Research in Catalysis, and the E.V. Murphree Award for Industrial and Engineering Chemistry of the American Chemical Society. He has received the Richard H. Wilhelm Award in Chemical Reaction Engineering, the Alpha Chi Sigma Award for Outstanding Research in Chemical Engineering, and the William H. Walker Award for Excellence in Contributions to the Chemical Engineering Literature from the American Institute of Chemical Engineers. The North American Catalysis Society has recognized the scientific achievements of research group with the Paul H. Emmett Award in Fundamental Catalysis and the Robert Burwell Lectureship and, jointly with the European Federation of Catalysis Societies, with the Michel Boudart Award for the Advancement of Catalysis. The latter also recognized him with the Francois Gault Lectureship, the only recipient from outside Europe in its history. His conceptual and practical contributions to catalysis were noted by the ENI Frontiers in Energy Prize, the Award for Excellence in Natural Gas Conversion, and the Tanabe Prize in Acid-Base Catalysis. He was named the V.N. Ipatieff Distinguished Professorship at Northwestern University, the Neil Armstrong Distinguished Visiting Fellow at Purdue University, and the Cross Canada Lecturer by the Chemical Institute of Canada. His teaching awards include the Donald Sterling Noyce Prize, the highest recognition in the Berkeley campus for teaching excellence in the physical sciences, as well as the Best Teacher Award of the

College of Chemistry on three separate occasions and the Award for Excellence in Teaching of the American Institute of Chemical Engineers. He has served the National Academies as member of panels for the National Research Council and of the Peer Committee and as Chair and Vice Chair of the Nominations Committee and of the Chemical Engineering Section of NAE.

Professor Iglesia has co-authored more than 350 articles in the leading journals in chemistry and chemical engineering and is a co-inventor of more than 50 patents. His research group addresses the design, synthesis, and structural and mechanistic characterization of inorganic solids useful as catalysts for chemical reactions important in the production, conversion and use of energy carriers, in sustainable petrochemical syntheses, and in the protection of the environment. These studies exploit novel synthetic protocols for the synthesis of active nanostructures and of isolated single-site catalysts within microporous and mesoporous solids, as well as techniques for the characterization of the local structure and atomic connectivity in these inorganic solids, in most instances during catalytic reactions. These studies also involve steady-state and transient kinetic methods and isotopically labeled reactants and products in order to elucidate the mechanism of catalytic reactions on surfaces, at the level of primary and secondary reaction networks and of elementary surface steps using a seamless combination of systematic experimental assessments benchmarked against rigorous analysis by density functional theory and higher-level treatments. The relevance of his research to the practice of catalysis is evident from his many patents, several of which have provided enabling intellectual property for processes involved in the conversion of natural gas, in applications of zeolite catalysis to petrochemicals synthesis and environmental control, and in the conversion of renewable oxygenate feedstocks to fuels and chemicals.

List of Publications and Patents

PUBLICATIONS

2020

346. Otto, T., Zhou, X., Zones, S.I., and Iglesia, E., **Journal of Catalysis (submitted)** (“Synthesis, Characterization, and Function of Au Nanoparticles Encapsulated within TS-1 Zeotype Frameworks as Catalysts for Propene Epoxidation with O₂/H₂O Reactants”)
345. Deshlahra, P., and Iglesia, E., **Chem. Comm. (invited feature article, submitted)** (“Reactivity Descriptors in Acid Catalysis: Acid Strength, Proton Affinity and Host-Guest Interactions”)
344. Kester, P.M., Gounder, R., and Iglesia, E., **Journal of Physical Chemistry C (submitted)** (“Alkane Dehydrogenation Catalyzed by Brønsted Acidic and Reaction-Derived Carbonaceous Active Sites in Zeolites”)
343. Aguirrezabal, I., and Iglesia, E., **Journal of Catalysis (submitted)** (“Mechanistic insights and consequences of an intrapore liquid phase in ethane, propene, and butane dimerization on Ni(II) cations grafted within ordered aluminosilicate mesopores”)
342. Kwon, S., Lin, T. C., and Iglesia, E., **Journal of Catalysis, 383 (2020) 60** (“Elementary Steps and Site Requirements in Formic Acid Dehydration Reactions”). DOI 10.1016/j.jcat.2019.12.043

2019

341. Garcia-Dieguez, M., Hibbitts, D., and Iglesia, E., **Journal of Physical Chemistry C, 123 (2019) 8447** (“Hydrogen Chemisorption Isotherms on Pt Particles at Catalytic Temperatures: Langmuir and Two-Dimensional Gas Models Revisited”)
340. Kwon, S., Deshlahra, P., and Iglesia, E., **Journal of Catalysis, 377 (2019) 692** (“Reactivity and Selectivity Descriptors of Dioxygen Activation Routes on Metal Oxide Catalysts”)
339. Noh, G., Zones, S.I., and Iglesia, E., **Journal of Catalysis, 377 (2019) 255** (“Isomer Sieving and the Prevalence of Terminal Methyl Branches in Reactions of Linear Alkanes Within Small Voids Containing Acid Sites”)

2018

338. Herrmann, S.T. and Iglesia, E., **Journal of Catalysis 360 (2018) 66** (“Selective conversion of acetone to isobutene and acetic acid on aluminosilicates: Kinetic coupling between acid-catalyzed and radical-mediated pathways”)
337. Iglesia, E., **Proceedings of the 24th Solvay Conference on Chemistry (2018) 148** (“Consequences of Confinement for Catalysis within Voids of Molecular Dimensions”) (<https://www.worldscientific.com/worldscibooks/10.1142/10907>)

336. Kwon, S., Deshlahra, P., and Iglesia, E., **Journal of Catalysis** **364** (2018) **228** (“Dioxygen Activation Routes in Mars-van Krevelen Redox Cycles Catalyzed by Metal Oxides”)
335. Maestri, M. and Iglesia, E., **Physical Chemistry and Chemical Physics** **20** (2018) **15725** (“First-Principles Assessment of Catalysis by Confinement: NO Oxidation on Silicate Frameworks Containing Voids of Molecular Dimensions”).
334. Noh, G., Shi, Z., Zones, S., and Iglesia, E., **Journal of Catalysis** **368** (2018) **389** (“Isomerization and β -Scission Reactions on Bifunctional Metal-Acid Catalysts: Consequences of Confinement and Diffusional Constraints on Reactivity and Selectivity”). DOI: 10.1016/jcat.2018.03.033.
333. Noh, G., Zones, S.I., and Iglesia, E., **Journal of Physical Chemistry C** **122** (2018) **25475** (“Consequences of acid strength and diffusional constraints for alkane isomerization and β -scission turnover rates and selectivities on bifunctional metal-acid catalysts”)
332. Otto, T., Zones, S.I., and Iglesia, E., **Microporous and Mesoporous Materials** **270** (2018) **10** (“Synthetic Strategies for the Encapsulation of Nanoparticles of Ni, Co, and Fe Oxides within Crystalline Microporous Aluminosilicates”)
331. Sarazen, M. and Iglesia, E., **ChemCatChem** **10** (2018) **4028** (“Effects of Charge, Size, and Shape of Transition States, Bound Intermediates, and Confining Voids in Reactions of Alkenes on Solid Acids”). DOI: 10.1002/cctc.201800401.
330. Wang, S. and Iglesia, E., **Journal of the American Chemical Society** **140** (2018) **775** (“Entropy-Driven High Reactivity of Formaldehyde in Nucleophilic Attack by Enolates on Oxide Catalysts”) DOI: 10.1021/jacs.7b11749
329. Yik, E.S. and Iglesia, E., **Journal of Catalysis** **368** (2018) **411** (“Mechanism and Site Requirements for Thiophene Desulfurization on Supported Re Domains in Metal or Sulfide Forms”) DOI: 10.1016/jcat.2018.03.031

2017

328. Sarazen, M.L. and Iglesia, E., **Journal of Catalysis** **354** (2017) **287** (“Experimental and Theoretical Assessment of the Mechanism of Hydrogen Transfer in Alkane-Alkene Coupling on Solid Acids”).
327. Wang, S. and Iglesia, E., **Journal of Physical Chemistry C** **121** (2017) **18030** (“Experimental and Theoretical Evidence for Reactivity of Bound Intermediates in Ketonization of Carboxylic Acids and Consequences of Acid-base Properties of Oxide Catalysts”).

326. Liu, J., Hibbitts, D., and Iglesia, E., **Journal of the American Chemical Society** **139** (2017) (11789) (“Dense CO Adlayers as Enablers of CO Hydrogenation Turnovers on Ru Surfaces”).
325. Wang, S. and Iglesia, E., **Journal of Catalysis** **352** (2017) **415** (“Catalytic Diversity Conferred by Confinement of Protons within Porous Aluminosilicates in Prins Condensation Reactions”).
324. Agirrezabal-Telleria, I. and Iglesia, E., **Journal of Catalysis** **352** (2017) **505** (“Stabilization of active, selective, and regenerable Ni-based dimerization catalysts by condensation within ordered mesopores”).
323. Tao, Z., Chemburkar, A., Hibbitts, D.D., Iglesia, E., and Neurock, M., **Faraday Discussions** **197** (2017) **59** (“Theoretical Insights into the Sites and Mechanisms for Base Catalyzed Esterification and Aldol Condensation Reactions over Cu”).
322. Sarazen, M.L. and Iglesia, E., **Proceedings of the National Academy of Sciences** **114** (2017) **E3900** (“Stability of Bound Species during Alkene Reactions on Solid Acids”).
321. Wang, S., Agirrezabal-Telleria, I., Bhan, A., Simonetti, D., Takanebe, K., and Iglesia, E., **Faraday Discussions** **197** (2017) **9** (“Catalytic Routes to Fuels from C₁ and Oxygenate Molecules”).
320. Wang, S. and Iglesia, E., **Journal of Catalysis** **345** (2017) **183** (“Experimental and Theoretical Assessment of the Mechanism and Site Requirements for Ketonization of Carboxylic Acids on Oxides”).
319. Otto, T., Zones, S., Hong Y., and Iglesia, E., **Journal of Catalysis** **356** (2017) **173** (“Synthesis of Highly Dispersed Cobalt Oxide Clusters Encapsulated within LTA Zeolites”).
318. Herrmann, S.T. and Iglesia, S., **Journal of Catalysis** **346** (2017) **134** (“Elementary Steps in Acetone Condensation Reactions Catalyzed by Aluminosilicates with Diverse Void Structures”).

2016

317. Hibbitts, D.D., Flaherty, D.W., and Iglesia, E., **ACS Catalysis** **6** (2016) **469** (“Role of Branching on the Rate and Mechanism of C-C Cleavage in Alkanes on Metal Surfaces”).
316. Hibbitts, D.D., Dybeck, E., Lawlor, T., Neurock, M., and Iglesia, E., **Journal of Catalysis** **337** (2016) **91** (“Preferential Activation of Carbon Monoxide near Hydrocarbon Chains during Fischer-Tropsch Synthesis on Ru”).

315. Knaeble, W. and Iglesia, E., **Journal of Physical Chemistry C** **120** (2016) **3371** (“Kinetic and Theoretical Insights into the Mechanism of Alkanol Dehydration on Solid Bronsted Acid Catalysts”).
314. Hibbitts, D.D., Flaherty, D.W., and Iglesia, E., **Journal of Physical Chemistry C** **120** (2016) **8125** (“Effects of Chain Length and van der Waals Interactions on the Mechanism and Rates of Metal-Catalyzed Hydrogenolysis of n-Alkanes”).
313. Otto, T., Zones S., and Iglesia, E., **Journal of Catalysis** **339** (2016) **195** (“Challenges and Strategies in the Encapsulation and Stabilization of Monodisperse Au Clusters within Zeolites”).
312. Wang, S. and Iglesia, E., **Journal of Catalysis**, **340** (2016) **302** (“Condensation and Esterification Reactions of Oxygenates on TiO₂: Elementary Steps, Site Requirements, and Synergistic Effects of Bifunctional Strategies”).
311. Deshlahra, P., and Iglesia, E., **Journal of Physical Chemistry C**, **120** (2016) **16741** (“Reactivity and Selectivity Descriptors for the Activation of C-H Bonds in Hydrocarbons and Oxygenates on Metal Oxides”).
310. Deshlahra, P. and Iglesia, E., **ACS Catalysis**, **6** (2016) **5386** (“Toward More Complete Descriptors of Reactivity in Catalysis by Solid Acids”).
309. Iwasaki, M. and Iglesia, **Journal of Catalysis** **342** (2016) **84** (“Mechanistic Assessments of NO Oxidation Turnover Rates and Active Site Densities on WO₃Promoted CeO₂ Catalysts”).
308. Otto, T., Ramallo-Lopez, J.M., Giovanetti, L., Requejo, F.G., Zones, S., and Iglesia, **Journal of Catalysis** **342** (2016) **125** (“Synthesis of Stable Monodisperse AuPd, AuPt and PdPt Bimetallic Clusters Encapsulated with LTA-Zeolites”).
307. Landry, A.M. and Iglesia, E., **Chemistry of Materials**, **28**, (2016) **5872** (“Synthesis of Bimetallic AuPt Clusters with Clean Surfaces via Sequential Displacement-Reduction Processes”).
306. Knaeble, W. and Iglesia, **Journal of Catalysis** **344** (2016) **817** (“Acid Strength and Metal-Acid Proximity Effects on Methylcyclohexane Ring Contraction Turnover Rates and Selectivities”).
305. Wang, S. and Iglesia, E., **ACS Catalysis**, **6** (2016) **7664** (“Mechanism of Isobutanal-Isobutene Prins Condensation on Solid Bronsted Acids”).
304. Landry, A.M. and Iglesia, E., **Journal of Catalysis** **344** (2016) **389** (“Displacement-Reduction Routes to PtPd Clusters and Mechanistic Inferences for the Synthesis of Other Bimetallic Compositions”).

303. Wang, S. and Iglesia, E., **Journal of Physical Chemistry C**, **120** (2016) **21589** (“Substituent Effects and Molecular Descriptors of Reactivity in Condensation and Esterification Reactions of Oxygenates on Acid-Base Pairs at TiO₂ and ZrO₂ Surfaces”).
302. Sarazen, M.L., Duskocil, E., and Iglesia, E., **ACS Catalysis**, **6** (2016) **7059** (“The Effects of Void Environment and Acid Strength on Alkene Oligomerization Selectivity”).
301. Chin, Y.-H., García-Diéguez, M. and Iglesia, E., **Journal of Physical Chemistry C** **120** (2016) **1446** (“Dynamics and Thermodynamics of Pd-PdO Phase Transition: Effects of Pd Cluster Size and Kinetic Implications for Catalytic Methane Combustion”).
300. Sarazen, M.L., Duskocil, E. and Iglesia, E., **Journal of Catalysis** **344** (2016) **553** (“Catalysis on Solid Acids: Mechanism and Catalyst Descriptors in Oligomerization Reactions of Light Alkenes”).

2015

299. Deshlahra, P., Carr, R., Chai, S.-H., and Iglesia, E., **ACS Catalysis** **5** (2015) **666** (“Mechanistic Details and Reactivity Descriptors in Oxidation and Acid Catalysis of Methanol”).
298. Flaherty, D., and Iglesia, E., **Journal of Physical Chemistry C** **119** (2015) **2597** (“Catalytic Ring Opening of Cycloalkanes on Ir Clusters: Alkyl Substitution Effects on the Structure and Stability of C-C Bond Cleavage Transition States”).
297. Hibbitts, D.D. and Iglesia, E., **Accounts of Chemical Research** **48** (2015) **1254** (“The Prevalence of Bimolecular Routes in the Activation of Diatomic Molecules with Strong Chemical Bonds on Catalytic Surfaces”).
296. Gurbuz, E.I., Hibbitts, D.D., and Iglesia, E., **Journal of the American Chemical Society** **137** (2015) **11984** (“Kinetic and Mechanistic Assessment of Alkanol/Alkanal Decarbonylation and Deoxygenation Pathways on Metal Catalysts”).
295. Goel, S., Zones, S., and Iglesia, E., **Chemistry of Materials** **27** (2015) **2056** (“Synthesis of Zeolites via Interzeolite Transformations without Organic Structure-Directing Agents”).
294. Jones, A. and Iglesia, E., **ACS Catalysis** **5** (2015) **5741** (“The Strength of Brønsted Acids Sites in Zeolites”).

2014

293. Wu, Z., Goel, S., Choi, M., and Iglesia, E., **Journal of Catalysis** **311** (2014) **458** (“Hydrothermal Synthesis of LTA-Encapsulated Metal Clusters and Consequences for Catalyst Stability, Reactivity and Selectivity”).

292. Jones, A., Carr, R., Zones, S., and Iglesia, E., **Journal of Catalysis** **312** (2014) **58** (“Acid Strength and Solvation in Catalysis by MFI Zeolites and Effects of the Identity, Concentration and Location of Framework Heteroatoms”).
291. Knaeble, W., Carr, R., and Iglesia, E., **Journal of Catalysis** **319** (2014) **283** (“Effects of Acid Strength and Solvation on the Isomerization of Hexane Isomers on Solid Brønsted Acids”).
290. Kunz, S. and Iglesia, E., **Journal of Physical Chemistry C** **118** (2014) **7468** (“Mechanistic Evidence for Sequential Displacement-Reduction Routes in the Synthesis of Pd-Au Clusters with Uniform Size and Clean Surfaces”).
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(54) **ZEOLITIC MATERIALS HAVING ENCAPSULATED BIMETALLIC CLUSTERS**

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