

2010

- 1031 (1066) Monodisperse Metal Nanoparticle Catalysts on Silica Mesoporous Supports: Synthesis Characterizations, and Catalytic Reactions. Gabor A. Somorjai and Sang Hoon Joo. In *Silica and Silicates in Modern Catalysis*. Ed. Istvan Halasz. Transworld Research Network, Kerala, India; pp. 277-311 (2010). LBNL-3322E
- 1032 (1057) Surface Mobility of Atoms and Molecules Studied with High Pressure Scanning Tunneling Microscopy. Gabor A. Somorjai, Feng Tao and Derek Butcher. In *Scanning Tunneling Microscopy in Surface Science, Nanoscience and Catalysis*, Eds. Michael Bowker and Philip R. Davies. Wiley-VCH Verlag , Weinheim (2010) pp. 189-217.
- 1033 (1073) Converting Homogeneous to Heterogeneous in Electrophilic Catalysis using Monodisperse Metal Nanoparticles. Cole A. Witham, Wenyu Huang, Chia-Kuang Tsung, John N. Kuhn, Gabor A. Somorjai and F. Dean Toste. *Nature Chemistry* **2**, 36 (2010). LBNL-4429E
- 1034 (1077) Spectroscopic Study of the Thermal Degradation of PVP-capped Rh and Pt Nanoparticles in H₂ and O₂ Environments. Yuri Borodko, Hyun Sook Lee, Sang Hoon Joo, Yawen Zhang and Gabor A. Somorjai. *J. Phys. Chem C* **114**, (2010) 1117-1126. LBNL-4536E
- 1035 (1078) Break-up of Stepped Platinum Catalyst Surfaces by High CO Coverage. Feng Tao, Sefa Dag, Lin-Wang Wang, Zhi Liu, Derek R. Butcher, Hendrik Bluhm, Miquel Salmeron and Gabor A. Somorjai. *Science* **327** (2010) 850. LBNL-2626E
- 1036 (1076) Electrochemically Enhanced Wet Cleaning of Ru Capping Thin Film for EUV Lithography Reflector. Hyungtak Seo, Jeong, Y. Park, Ted Liang, Gabor A. Somorjai. *J. Electrochem. Soc.* **157**(4), (2010) H414-H419.
- 1037 (1081) Major Successes of Theory-and-Experiment-Combined Studies in Surface Chemistry and Heterogeneous Catalysis. Gabor A. Somorjai and Yimin Li. *Top Catal.* **53**, 311-325 (2010). LBNL-4432E
- 1038 (1082) Evolution of Structure and Chemistry of Bimetallic Nanoparticle Catalysts under Reaction Conditions. Feng Tao, Michael E. Grass, Yawen Zhang, Derek R. Butcher, Funda Aksoy, Shaul Aloni, Virginia Altoe, Selim Alayoglu, James R. Renzas, Chia-Kuang Tsung, Zhongwei Zhu, Zhi Liu, Miquel Salmeron, Gabor Somorjai. *J. Am. Chem. Soc.* **132**, 8697-8703 (2010).
- 1039 (1084) Structure Effects on Pyridine Hydrogenation over Pt(111) and Pt(100) Studied with Sum Frequency Generation Vibrational Spectroscopy. Christopher J.Kliewer and Gabor A. Somorjai GA. *Catalysis Letters* **137**, 118-122 (2010).
- 1040 (1079) Selective Nanocatalysis of Organic Transformation by Metals: Concepts, Model Systems, and Instruments. Gabor A. Somorjai and Yimin Li. *Top Catal* **53**, 832-847 (2010)

- 1041 (1088) Nanoscale Advances in Catalysis and Energy Applications. Yimin Li and Gabor A. Somorjai. *Nano Lett.* **10**, 2289-2295 (2010). LBNL-4431E
- 1042 (1089) *Introduction to Surface Chemistry and Catalysis*. Second Edition. Gabor A. Somorjai and Yimin Li. John Wiley & Sons, Inc., Hoboken, New Jersey (2010).
- 1043 (1090) Size Effect of Ruthenium Nanoparticles in Catalytic Carbon Monoxide Oxidation. Sang Hoon Joo, Jeong Y. Park, J. Russell Renzas, Derek R. Butcher, Wenyu Huang, and Gabor A. Somorjai. *Nano Lett.* **10**, 2709-2713 (2010). LBNL-4430E
- 1044 (1086) Seedless Polyol Synthesis and CO Oxidation Activity of Monodisperse (111) and (100)-Oriented Rhodium Nanocrystals in Sub-10 nm Sizes. Yawen Zhang, Michael E. Grass, Wenyu Huang and Gabor A. Somorjai. *Langmuir*, **26**(21) 16463-16468 (2010). LBNL-4428E
- 1045 (1085) Molecular Studies of Model Surfaces of Metals from Single Crystals to Nanoparticles under Catalytic Reaction Conditions. Evolution from Prenatal and Postmortem Studies of Catalysts. Gabor A. Somorjai and Cesar Aliaga. Festschrift for 75th Birthday. *Langmuir* **26** (21) 16190-16203 (2010).
- 1046 (1087) Rh Thin-Film Nanocatalysts as Chemical Sensors – The Hot Electron Effect. James Russell Renzas and Gabor A. Somorjai. *J. Phys. Chem. C* **114**, 17660 (2010)
- 1047 (1091) Furan Hydrogenation over Pt(111) and Pt(100) Single-Crystal Surfaces and Pt Nanoparticles from 1 to 7 nm: A Kinetic and Sum Frequency Generation Vibrational Spectroscopy Study. Christopher J. Kliewer, Cesar Aliaga, Marco Bieri, Wenyu Huang, Chia-Kuang Tsung, Jennifer B. Wood, Kyriakos Komvopoulos, Gabor A. Somorjai. *J. Am. Chem. Soc.* **132** 13088-13095 (2010).
- 1048 (1095) Highly Active Heterogeneous Palladium Nanoparticle Catalysts for Homogeneous Electrophilic Reactions in Solution and the Utilization of a Continuous Flow Reactor. Wenyu Huang, Jack Hung-Chang Liu, Pinar Alayoglu, Yimin Li, Cole A. Witham, Chia-Kuang Tsung, F. Dean Toste, and Gabor A. Somorjai. *J. Am. Chem. Soc.* **132**, 16771-16773 (2010).

2011

- 1049 (1093) The Impact of Surface Chemistry. Gabor A. Somorjai and Yimin Li. *PNAS* **108**, 917-924 (2011)
- 1050 (1094) Rh_{1-x}Pd_x Nanoparticle Composition Dependence in CO Oxidation by Oxygen: Catalytic Activity Enhancement in Bimetallic Systems. James Russell Renzas, Wenyu Huang, Yawen Zhang, Michael E. Grass, Dat Tien Hoang, Selim Alayoglu, Derek R. Butcher, Franklin (Feng) Tao, Zhi Liu and Gabor A. Somorjai. *Phys. Chem. Chem. Phys.* **13**, 2556-2562 (2011).
- 1051 (1096) Generation of Highly n-Type Titanium Oxide Using Plasma Fluorine Insertion. Hyungtak Seo, L. Robert Baker, Antoine Hervier, Jimwoo Kim, J. L. Whitten, and Gabor A. Somorjai. *Nano Letters*, **11**, 715 (2011).
- 1052 (1110) Rh_{1-x}Pd_x Nanoparticle Composition Dependence in CO Oxidation by NO. James Russell Renzas, Wenyu Huang, Yawen Zhang, Michael E. Grass and Gabor A. Somorjai. *Cat. Lett.* **141**, 235-241 (2011).
- 1053 (1104) Nanocrystal Bilayer for Tandem Catalysis. Yusuke Yamada, Chia-Kuang Tsung, Wenyu Huang, Ziyang Huo, Susan E. Habas, Tetsuro Soejima, Cesar E Aliaga, Gabor A. Somorjai, Peidong Yang. *Nature Chemistry*, **3**, 372-376 (2011).
- 1054 (1097) An SFG Study of Interfacial Amino Acids at the Hydrophilic SiO₂ and Hydrophobic Deuterated Polystyrene Surfaces. George J. Holinga, Roger L. York, Robert M. Onorato, Christopher M. Thompson, Nic E. Webb, Alfred P. Yoon and Gabor A. Somorjai. *J. Am. Chem. Soc.* **133**, 6243-6253 (2011).
- 1055 (1099) Sum Frequency Generation Vibrational Spectroscopy and Kinetic Study of 2-Methylfuran and 2,5-Dimethylfuran Hydrogenation over 7 nm Platinum Cubic Nanoparticles. Cesar Aliaga, Chia-Kuang Tsung, Selim Alayoglu, Kyriakos Komvopoulos, Peidong Yang and Gabor A. Somorjai. *J. Phys. Chem. C* **115**, 8104-8109 (2011).
- 1056 (1100) In-situ X-ray Adsorption Study of Evolution of Oxidation States and Structure of Cobalt in Co and CoPt Bimetallic Nanoparticles (4 nm) under Reducing (H₂) and Oxidizing (O₂) Environments. Fan Zheng, Selim Alayoglu, Jinghua Guo, Vladimir Pushkarev, Yimin Li, Per-Anders Glans, Jeng-Lung Chen, Gabor A. Somorjai. *Nano Letters* **11**, 847-853 (2011)
- 1057 (1101)

- Surface Composition and Catalytic Evolution of $\text{Au}_x\text{Pd}_{1-x}$ ($x=0.25, 0.50$ and 0.75) Nanoparticles under CO/O_2 Reaction in Torr Pressure Regime and at 200°C . Selim Alayoglu, Franklin Tao, Virginia Altoe, Colin Specht, Zhongwei Zhu, Funda Aksoy, Derek R. Butcher, Russ J. Renzas, Zhi Liu and Gabor A. Somorjai. *Cat. Lett.* **141**, 633-640 (2011).
- 1058 (1102) Spectroscopic Study of Platinum and Rhodium Dendrimer (PAMAM G4OH) Compounds, Structure and Stability. Yuri Borodko, Christopher M. Thompson, Wenyu Huang, Huseyin B. Yildiz, Heinz Frei and Gabor A. Somorjai. *J. Phys. Chem. C* **115**, 4757-4767 (2011).
- 1059 (1109) Curing Induced Structural Reorganization and Enhanced Reactivity of Amino-Terminated Organic Thin Films on Solid Substrates: Observations of Two Types of Chemically and Structurally Unique Amino groups on the Surface. J. Kim, G. H. Holinga and Gabor A. Somorjai. *Langmuir*, **27**, 5171-5175 (2011).
- 1060 (1098) Improved Oxidation Assistance of RuSi Capping Layer for Extreme Ultraviolet (EUV) Lithography Reflector. Jeong Y. Park, Leonid Belau, Hyungtak Seo, Gabor A. Somorjai. *J. Vac. Sci. Technol. B* **29**(4), 041602-1 (2011).
- 1061 (1106) Highly n-Type Titanium Oxide as an Electronically Active Support for Platinum in the Catalytic Oxidation of Carbon Monoxide. L. Robert Baker, Antoine Hervier, Hyungtak Seo, Griffin Kennedy, Kyriakos Komvopoulos and Gabor A. Somorjai. *J. Phys. Chem. C* **115**, 16006-16011 (2011).
- 1062 (1107) CO_2 Hydrogenation Studies on Co and CoPt Bimetallic Nanoparticles under Reaction Conditions using TEM, XPS and NEXAFS. Selim Alayoglu, Fan Zheng, Vladimir V. Pushkarev, Zhi Liu, Jinghua Guo, Simon Beaumont, Viacheslav Iablokov, Haimei Zheng, Norbert Kruse and Gabor A. Somorjai. *Topics in Catalysis* **54**(13), 778-785 (2011).
- 1063 (1111) Size and Shape Dependence of Pt Nanoparticles over Methylcyclopentane/Hydrogen Ring Opening / Ring Enlargement Reaction. S. Alayoglu, C. Aliaga, C. Sprung, G. A. Somorjai. *Cat. Lett.* **141**, 914-924 (2011).
- 1064 (1112) A Pt-Cluster-Based Heterogeneous Catalyst for Homogeneous Catalytic Reactions: X-ray Adsorption Spectroscopy and Reaction Kinetic Studies of Their Activity and Stability against Leaching. Yimin Li, Wenyu Huang, Cole Witham, Jack Liu, Zhongwei Zhu, Christopher Thompson, Arpana Arjun, Kihong Lee, Matthew Marcus, Dean F. Toste and Gabor A. Somorjai. *J. Am. Chem. Soc.* **133** 13527-33. (2011).
- 1065 (1103) Determination of Molecular Surface Structure, Composition and Dynamics under Reaction Conditions at High Pressures and at the Solid-Liquid Interface. Gabor A. Somorjai, Simon K. Beaumont and Selim Alayoglu. *Angew. Chem. Int. Ed.* **50**, 10116-10129 (2011).
- 1066 (1113)

- Surface Plasmon-Driven Hot Electron Flow Probed with Metal-semiconductor Nanodiodes.
Young Keun Lee, Chan Ho Jung, Jonghyuk Park, Hyungtak Seo, Gabor A. Somorjai,
Jeong Park. *Nano Letters* **11**, 4251-4255 (2011).
- 1069 (1108) *In-situ* Oxidation Study of Pt(110) and Its Interaction with CO. Derek R. Butcher, Michael E. Grass, ZhenHua Zeng, Funda Aksoy, Hendrik Bluhm, Wei-Sue Li, Bongjin S. Mun, Gabor A. Somorjai and Zhi Liu. *J. Am. Chem. Soc.*, **133**, 20319-20325 (2011).
- 1070 (1114) Titanium Oxide/Platinum Catalysis: Charge Transfer from Titanium Oxide Support Controls Activity and Selectivity in Methanol Oxidation on Platinum. Antoine Hervier, L. Robert Baker, Kyriakos Komvopoulos and Gabor A. Somorjai. *J. Phys. Chem. C.* **115** 22960-22964 (2011).

2012

- 1067 (1121) From Single Pt Atoms to Pt Nanocrystals: Photoreduction of Pt²⁺ inside of a PAMAM Dendrimer. Yuri Borodko, Peter Ercius, Vladimir Pushkarev, Christopher Thompson, Gabor A. Somorjai. *J. Phys. Chem. Lett.* **3**, 236-241 (2012)
- 1068 (1105) Size Effect of RhPt Bimetallic Nanoparticles in Catalytic Activity of CO Oxidation: Role of Surface Segregation. Jeong Y. Park, Yawen Zhang, Sang Hoon Joo, Yousung Jung, and Gabor A. Somorjai. *Cat. Today* **181** 133-137 (2012).
- 1069 (1118) In-situ Study of Oxidation States and Structure of 4 nm CoPt Bimetallic Nanoparticles during CO Oxidation using X-ray Spectroscopies in Comparison with Reaction Turnover Frequency. Fan Zheng, Selim Alaoyoglu, Vladimir Pushkarev, Simon Beaumont, Colin Specht, Funda Aksoy, Zhi Liu, Jinghua Guo, Gabor A. Somorjai. *Catalysis Today* **182** 54-59 (2012).
- 1070 (1092) Shape Changes of Pt Nanoparticles Induced by Deposition on Mesoporous Silica. Lisandro J. Giovanetti, Joes M. Ramallo-Lopez, Michael Foxe, Louis C. Jones, Matthias M. Koebel, Gabor A. Somorjai, Aldo F. Craievich, Miquel S. Salmeron and Felix G. Requejo. *Small* **8**, 468-473 (2012).
- 1071 (1117) Building Bridges in Catalysis Science. Monodispersed Metallic Nanoparticles for Homogeneous Catalysis and Atomic Scale Characterization of Catalysts Under Reaction Conditions. Elad Gross, Jams M. Krier, Lars Heinke and Gabor A. Somorjai. *Topics in Catalysis* **55**, 13-23 (2012).
- 1072 (1115) The Colloidal Chemistry of Nanocatalysts: A Molecular View. Kwangjin An, Selim Alayoglu, Trevor Ewer, Gabor A. Somorjai. *J. Colloid and Interface Sciene* **373** 1-13 (2012).
- 1073 (1120) Formation of Nanometer-sized Surface Platinum Oxide Clusters on a Stepped Pt(557) Single Crystal Surface Induced by Oxygen: A High-Pressure STM and Ambient-pressure XPS Study. Zhongwei Zhu, Franklin (Feng) Tao, Fan Zheng, Rui Chang, Yimin Li, Lars Heinke, Zhi Liu, Miquel Salmeron, Gabor A. Somorjai. *Nano Letters* **12**, 1491-1497 (2012).
- 1074 (1119) Adsorption of Amino Acids and Dipeptides to the Hydrophobic Polystyrene Interface Studied by SFG and QCM: The Special Case of Phenylalanine. Robert M. Onorato, Alfred P. Yoon, James T. Lin and Gabor A. Somorjai. *J. Phys. Chem. C* **116**, 9947-9954 (2012)
- 1075 (1122) Solid-State Charge-Based Device for Control of Catalytic Carbon Monoxide Oxidation on Platinum Nanofilms Using External Bias and Light. L. Robert Baker, Antoine Hervier, Griffin Kennedy and Gabor A. Somorjai. *Nano Letters* **12**, 2554-2558 (2012).

- 1076 (1125) Size-Controlled Model Co Nanoparticle Catalysts for CO₂ Hydrogenation: Synthesis, Characterization and Catalytic Reactions. Viacheslav Iablokov, Simon K. Beaumont, Selim Alayoglu, Vladimir V. Pushkarev, Colin Specht, Jinghua Gao, A. Paul Alivisatos, Norbert Kruse and Gabor A. Somorjai. *Nano Letters* **12** 3091-3096 (2012).
- 1077 (1123) Hydrogenation of Benzene and Toluene over Size Controlled Pt/SBA-15 catalysts: Elucidation of the Pt Particle Size Effect on Reaction Kinetics. Vladimir V. Pushkarev, Kwangjin An, Selim Alayoglu, Simon K. Beaumont, Gabor A. Somorjai. *J. Catalysis* **292** 64-72 (2012).
- 1078 (1126) Reforming of C₆ Hydrocarbons over Model Pt Nanoparticle Catalysts. Selim Alayoglu, Vladimir V. Pushkarev, Nathan Musselwhite, Kwangjin An, Simon Beaumont and Gabor A. Somorjai. *Topics in Catalysis* **55** 723-730 (2012).
- 1079 (1127) Sum Frequency Generation Vibrational Spectroscopy of Colloidal Platinum Nanoparticle Catalysts: Disordering Versus Removal of Organic Capping. James M. Krier, William D. Michalak, L. Robert Baker, Kwangjin An, Kyriakos Komvopoulos and Gabor A. Somorjai. *J. Phys. Chem. C* **116** 17540-17546 (2012).
- 1080 (1128) Size and Shape Control of Metal Nanoparticles for Reaction Selectivity in Catalysis. Kwangjin An and Gabor A. Somorjai. *ChemCatChem* **4**, 1512-1524 (2012).
- 1081 (1116) Monodisperse Metal Nanoparticle Catalysts: Synthesis Characterizations, and Molecular Studies under Reaction Conditions. Vladimir Pushkarev, Zhongwei Zhu, Kwangjin An, Antoine Hervier, Gabor A. Somorjai. *Topics in Catlysis*, **55**, 1257-1275 (2012).
- 1082 (1124) Control of Selectivity in Heterogeneous Catalysis by Tuning Nanoparticle Properties and Flow-reactor Residence Time. Elad Gross, Jack Hung-Chang Liu, F. Dean Toste and Gabor A. Somorjai. *Nature Chemistry* **4**, 947-952 (2012).
- 1083 (1130) Furfuraldehyde Hydrogenation on Titanium Oxide-Supported Platinum Nanoparticles Studied by Sum Frequency Generation Vibrational Spectroscopy: Acid-base Catalysis Explains the Molecular Origin of Strong Metal-Support Interactions. L. Robert Baker, Griffin Kennedy, Matthjis Van Spronsen, Antoine Hervier, Xiaojun Cai, Shiyou Chen, Lin-Wang Wang, Gabor A. Somorjai. *J. Am. Chem. Soc.* **134**, 14208-14216 (2012).
- 1084 (1131) High Structure Sensitivity of Vapor-Phase Furfural Decarbonylation/Hydrogenation Reaction Network as a Function of Size and Shape of Pt Nanoparticles. Vladimir V. Pushkarev, Nathan Musselwhite, Kwangjin An, Selim Alayoglu, Gabor A. Somorjai. *Nano Lett.* **12**, 5196-5201 (2012).
- 1085 (1132) High-Pressure Adsorption of Ethylene on Cubic Pt Nanoparticles and Pt(100) Single Crystals Probed by *In-Situ* Sum Frequency Generation Vibrational Spectroscopy. Sasha J. Kweskin, Robert M. Rioux, H. Song, K. Komvopoulos, P. Yang and Gabor A. Somorjai. *ACS Catalysis* **2**, 2377-2386 (2012).

- 1086 (1134) The Role of an Organic Cap in Nanoparticle Catalysis: Reversible Restructuring of Carbonaceous Material Controls Catalytic Activity of Platinum Nanoparticles for Ethylene Hydrogenation and Methanol Oxidation. L. Robert Baker, Griffin Kennedy, James M. Krier, Matthijs Van Spronsen, Robert M. Onorato and Gabor A. Somorjai. *Cat. Lett.* **142**, 1286-1294 (2012).
- 1087 (1133) Intrinsic Relation between Catalytic Activity of CO Oxidation on Ru Nanoparticles and Ru Oxides Uncovered with Ambient Pressure XPS. Kamran Qadir, Sang Hoon Joo, Bongjin S. Mun, Derek R. Butcher, J. Russell Renzas, Funda Aksoy, Zhi Liu, Gabor A. Somorjai and Jeong Young Park. *Nano Letters* **12**, 5761-5768 (2012).
- 1088 (1152) In Situ Surface and Reaction Probe Studies with Model Nanoparticle Catalysts. Selim Alayoglu, James M. Krier, William D. Michalak, Zhongwei W. Zhu, Elad Gross, Gabor A. Somorjai, *ACS Catal.* **2**, 2250 (2012)

2013

- 1089 (1139) Preparation of Mesoporous Oxides and Their Support Effects on Pt Nanoparticle Catalysts in Catalytic Hydrogenation of Furfural. Kwangjin An, Nathan Musselwhite, Griffin Kennedy, Vladimir V. Pushkarev, L. Robert Baker, Gabor A. Somorjai. *J. Colloid and Interface Science* **392**, 122-128 (2013).
- 1090 (1136) Structure Sensitivity in Pt Nanoparticle Catalysts for Hydrogenation of 1,3-Butadiene: *In Situ* Study of Reaction Intermediates using SFG Vibrational Spectroscopy. William D. Michalak, James M. Krier, Kyriakos Komvopoulos and Gabor A. Somorjai. *J. Phys. Chem. C* **117**, 1809-1817 (2013)
- 1091 (1135) In Situ Scanning Tunneling Microscopy and X-ray Photoelectron Spectroscopy Studies of Ethylene-Induced Structural Changes on the Pt(100)-hex Surface. Zhongwei Zhu, Derek R. Butcher, Baohua Mao, Zhi Liu, Miquel Salmeron and Gabor A. Somorjai. *J. Phys. Chem. C* **117**, 2799-2804 (2013).
- 1092 (1129) Hot Carrier-Driven Catalytic Reactions on Pt-CdSe Pt Nanodumbbells and Pt/GaN under Light Irradiation. Sun Mi Kim, Seon Joo Lee, Seung Hyun Kim Sangku Kwon, Ki Ju Yee, Hyunjoon Song, Gabor A. Somorjai, and Jeong Young Park. *Nano Letters* **13**, 1352 (2013).
- 1093 (1140) Asymmetric Catalysis at the Mesoscale: Gold Nanoclusters Embedded in Chiral Self-Assembled-Monolayer as Heterogeneous Catalyst for Asymmetric Reactions. Elad Gross, Jack H. Liu, Selim Alayoglu, Matthew A. Marcus, Sirine C. Fakra, F. Dean Toste and Gabor A. Somorjai. *J. Am. Chem. Soc.* **135** 3881-3886 (2013).
- 1094 (1144) Influence of Size-Induced Oxidation State of Platinum Nanoparticles on Selectivity and Activity in Catalytic Methanol Oxidation in the Gas Phase. Hailiang Wang, Yihai Wang, Zhongwei Zhu, Andras Sapi, Kwangjin An, Kennedy Griffin, William D. Michalak, Gabor A. Somorjai. *Nano Letters* **13**, 2976-2979 (2013).
- 1095 (1137) Exploring Surface Science and Restructuring in Reactive Atmospheres of Colloidally Prepared Bimetallic CuNi and CuCo Nanoparticles on SiO₂ *in situ* Using Ambient Pressure X-ray Photoelectron Spectroscopy. Simon K. Beaumont, Selim Alayoglu, Vladimir V. Pushkarev, Zhi Liu, Norbert Kruse and Gabor A. Somorjai. *Faraday Discuss.*, **162**, 31-44 (2013).
- 1096 (1145) Concluding Remarks. Gabor A. Somorjai. *Faraday Discuss.*, **162**, 395-401 (2013)
- 1097 (1143) Mobility on the Reconstructed Pt(100)-hex Surface under Ethylene and its Mixture with Hydrogen and Carbon Monoxide. Derek R. Butcher, Zhongwei Zhu, Baohua Mao, Hailiang Wang, Zhi Liu, Miquel Salmeron and Gabor A. Somorjai. *ChemCommun.*, **49** 6903-6905 (2013)

- 1098 (1150) Tuning the Electronic Structure of Titanium Oxide Support to Enhance the Electrochemical Acticity of Platinum Nanoparticles. Feifei Shi, L. Robert Baker, Antoine Hervier, Gabor A. Somorjai and Kyriakos Komvopoulos. *Nano Letters* **13**, 4469-4474 (2013).
- 1099 (1155) Structure and Chemical State of the Pt(557) Surface During Hydrogen Oxidation Reaction Studied by In-Situ Scanning Tunneling Microscopy and X-ray Photoelectron Spectroscopy. Zhongwei Zhu, Gérôme Melaet, Stephanus Axnanda, Selim Alayoglu, Zhi Liu, Miquel Salmeron, and Gabor A. Somorjai. *J. Am. Chem. Soc.* **135** (12560-12563 (2013).
- 1100 (1160) The Impact of Electronic Charge on Catalytic Reactivity and Selectivity of Metal-Oxide Supporter Metallic Nanoparticles. Elad Gross and Gabor A. Somorjai. *Topics in Catalysis* **56**, 1049-1058 (2013)
- 1101 (1141) Investigations of Structure Sensitivity in Heterogeneous Catalysis: From Single Crystals to Monodisperse Nano Particles. Nathan Musselwhite and Gabor A. Somorjai. *Topics in Catalysis* **56**, 1277-1283 (2013)
- 1102 (1173) Isomerization of *n*-Hexane Catalyzed by Supported Monodisperse PtRh Bimetallic Nanoparticles. Nathan Musselwhite, Selim Alayoglu, Gerome Melaet, Vladimir V. Pushkarev, Avery E. Lindeman, Kwangjin An, Gabor A. Somorjai. *Catal. Lett.* **143**, 907-911 (2013).
- 1103 (1162) Bridging Materials and Pressure Gaps in Surface Science and Heterogeneous Catalysis. Jeong Young Park and Gabor A. Somorjai. In *Current Trends of Surface Science and Catalysis*, Springer (2013), pp. 3-17.
- 1104 (1138) Catalysis in Energy Generation and Conversion: How Insight into Nanostructure, Composition, and Electronic Structure Leads to Better Catalysts (Perspective). William D. Michalak and Gabor A. Somorjai. *Topics in Catalysis*, **56**, 1611-1622 (2013)
- 1105 (1147) Surface Composition Changes of Redox Stabilized Bimetallic CoCu Nanoparticles Supported on Silica under H₂ and O₂ Atmospheres and During Reaction between CO₂ and H₂: In Situ X-ray Spectroscopic Characterization. Selim Alayoglu, Simon Beaumont, Gerome Melaet, Avery E. Lindeman, Nathan Musselwhite, Christopher J. Brooks, Matthew A. Marcus, Jinghua Guo, Zhi Liu, Norbert Kruse, Gabor A. Somorjai. *J. Phys. Chem. C.* **117**, 21803-21809 (2013).
- 1106 (1149) Enhanced CO Oxidation Rates at the Interface of Mesoporous Oxides and Pt Nanoparticles. Kwangjin An, Selim Alayoglu, Nathan Musselwhite, Sheba

Plamthottam, Gerome Melaet, Avery E. Lindeman and Gabor A. Somorjai. *J. Am. Chem. Soc.*, **135** 16689-16696 (2013).

- 1107 (1153) Promotion of Hydrogenation of Organic Molecules by Incorporating Iron into Platinum Nanoparticle Catalysts: Displacement of Inactive Reaction Intermediates. Hailiang Wang, James M. Krier, Zhongwei Zhu, Gérôme Melaet, Yihai Wang, Griffin Kennedy, Selim Alayoglu, Kwangjin An and Gabor A. Somorjai. *ACS Catalysis* **3**, 2371-2375 (2013).
- 1108 (1156) Sum Frequency Generation Study of the Interfacial Layer in Liquid-Phase Heterogeneously Catalyzed Oxidation of 2-Propanol on Platinum: Effect of the Concentrations of Water and 2-propanol at the Interface. Christopher M. Thompson, Lindsay M. Carl and Gabor A. Somorjai. *J. Phys. Chem.* **117** 26077-26083 (2013)
- 1109 (1159) From Single Atoms to Nanocrystals: Photoreduction of $[PtCl_6]^{2-}$ in Aqueous and Tetrahydrofuran Solutions of PVP. Yuri Borodko, Peter Ercius, Danylo Zherebetskyy, Yihai Wang, Yintao Sun and Gabor A. Somorjai. *J. Phys. Chem. C* **117**, 26667-26674 (2013)
- 1110 (1151) Pt-mediated Reversible Reduction and Expansion of CeO_2 in Pt Nanoparticle/Mesoporous CeO_2 Catalyst: *In situ* X-ray Spectroscopy and Diffraction Studies under Redox (H_2 and O_2) Atmospheres. Selim alayoglu, Kwangjin An, Gérôme Melaet, Shiyou Chen, Fabiano Bernardi, Ling Wang Wang, Avery E. Lindeman, Nathan Musselwhite, Jinghua Guo, Zhi Liu, Matthew A. Marcus, and Gabor A. Somorjai. *J. Phys. Chem. C* **117**, 26608-26616 (2013)

2014

- 1111 (1158) Colloidal Metal Nanocatalysts: Synthesis, Characterization, and Catalytic Applications. Kyungsu Na, Qiao Zhang and Gabor A. Somorjai. *J. Clust Sci.* **25**, 83-114 (2014).
- 1112 (1157) Inorganic Micelles as Efficient and Recyclable Micellar Catalysts. Qiao Zhang, Xing-Zhong Shu, J. Matthew Lucas, F. Dean Toste, Gabor A. Somorjai, A. Paul Alivisatos. *Nano Letters* **14**, 379-383 (2014)
- 1113 (1148) CO Oxidation on PtSn Nanoparticle Catalysts Occurs at the Interface of Pt and Sn Oxide Domains Formed under Reaction Conditions. William D. Michalak, James M. Krier, Selim Alayoglu, Jae-Yoon Shin; Kwangjin An; Kyriakos Komvopoulos; Zhi Liu and Gabor A. Somorjai. *J. Catalysis* **312** 17-25 (2014).
- 1114 (1154) Cobalt Particle Size Effects in the Fischer-Tropsch Synthesis and in the Hydrogenation of CO₂ Studied with Nanoparticle Model Catalysts on Silica. Gérôme Melaet, Avery E. Lindeman and Gabor A. Somorjai. *Topics in Catalysis* **57** 500-507 (2014).
- 1115 (1164) In-Situ IR and X-ray High Spatial-Resolution Microspectroscopy Measurements of Multistep Organic Transformation in Flow Microreactor Catalyzed by Au Nanoclusters. Elad Gross, Xing-Zhong Sue, Selim Alayoglu, Hans A. Bechtel, Michel C. Martin, Dean F. Toste and Gabor A. Somorjai. *J. Am. Chem. Soc.* **136** 3624-3629 (2014).
- 1116 (1142) Highly Crystalline Multimetallic Nanoframes with Three-Dimensional Electrocatalytic Surfaces. Chen Chen, Yijin Kang, Ziyang Huo, Zhongwei Zhu, Wenyu Huang, Huolin Xin, Joshua D. Snyder, Dongguo Li, Jeffrey A. Herron, Manos Mavrakis, Miaofang Chi, Karren L. More, Yadong Li, Nenad M. Markovic, Gabor A. Somorjai, Peidong Yang and Vojislav R. Stamenkovic. *Science*, **343**, 1339 (2014).
- 1117 (1168) Designed Catalysts from Pt Nanoparticle-Supported on Macroporous Oxides for Selective Isomerization of *n*-hexane. Kwangjin An, Selim Alayoglu, Nathan Musselwhite, Kyungsu Na and Gabor A. Somorjai. *J. Am. Chem. Soc.* **136**, 6830-6833 (2014)
- 1118 (1161) Selective Amplification of C=O Bond Hydrogenation on Platinum with TiO₂ as a Support. Catalytic Reaction and Sum-Frequency Generation Vibrational Spectroscopy Studies of Crotonaldehyde Hydrogenation Griffin Kennedy, L. Robert Baker and Gabor A. Somorjai. *Angew. Chemie Int. Ed.* **53**, 3405-3408 (2014).
- 1119 (1165) Mesoscale Nanostructures as a Bridge Between Homogeneous and Heterogeneous Catalysis. Elad Gross and Gabor A. Somorjai. *Topics in Catalysis* **57**, 812-821 (2014).

- 1120 (1163) Evidence of Highly Active Co Oxide Catalyst for the Fischer-Tropsch Synthesis and CO₂ Hydrogenation. Gerome Melaet, Selim Alayoglu, Cheng-Shiuan Li, Walter T. Ralston, Kwangjin An, Nathan Musselwhite, Bora Kalkan and Gabor A. Somorjai. *J. Am. Chem. Soc.* **136** 2260-2263 (2014).
- 1121 (1166) Revealing the Atomic Restructuring of Pt-Co Nanoparticles. Huolin L. Xin, Selim Alayoglu, Runzhe Tao, Arda Genc, Chong-Min Wang, Libor Kovarik, Eric A. Stach, Lin-Wang Wang, Miquel Salmeron, Gabor A. Somorjai and Haimei Zheng. *Nano Letters* **14**, 3203-3207 (2014)
- 1122 (1174) Recovery of Pt Surfaces for Ethylene Hydrogenation-Based Active Site Determination. Andras Sapi, Chris Thompson, Hailiang Wang, William D. Michalak, Walter T. Ralston, Selim Alayoglu, and Gabor A. Somorjai. *Catalysis Letters* **144** 1151-1158 (2014).
- 1123 (1179) Identification of Diethyl 2,5-Dioxahexane Dicarboxylate and Polyethylene Carbonate as Decomposition Products of Ethylene carbonate Based Electrolytes by Fourier Transform Infrared Spectroscopy. Feifei Shi, Hui Zhao, Gao Liu, Philip N. Ross, Gabor A. Somorjai and Kyriakos Komvopoulos. *J. Phys. Chem. C* **118**, 14732-14738 (2014).
- 1124 (1171) Combining in Situ NEXAFS Spectroscopy and CO₂ Methanation Kinetics to Study Pt and Co Nanoparticle Catalysts Reveals Key Insights into the Role of Platinum in Promoted Cobalt Catalysis. Simon K. Beaumont, Selim Alayoglu, Colin Specht, William D. Michalak, Vladimir V. Pushkarev, Jinghua Guo, Norbert Kruse and Gabor A. Somorjai. *J. Am. Chem. Soc.*, **136**, 9898-9901 (2014).
- 1125 (1175) High Temperature Catalytic Reforming of n-Hexane over Supported and Core-Shell Pt Nanoparticle Catalysts: Role of Oxide-Metal Interface and Thermal Stability. Kwangjin An, Qiao Zhang, Selim Alayoglu, Nathan Musselwhite, Jae-youn Shin, Gabor A. Somorjai. *Nano Lett* **14**, 4907-12 (2014).
- 1126 (1176) Influence of Step Geometry on the Reconstruction of Stepped Platinum Surfaces Under Ethylene and CO. Zhongwei Zhu, Cedric Barroo, Leonid Lichtenstein, Baran Eren, Cheng-Hao Wu, Baohua Mao, Thierry Visart de Bocarme, Zhi Liu, Norbert Kruse, Miquel Salmeron, Gabor A. Somorjai. *J. Phys. Chem. Lett.* **5**, 2626-2631 (2014).
- 1127 (1172) A Nanoscale demonstration of Hydrogen Atom Spill-Over and Surface Diffusion Across Silica using the Kinetics of CO₂ Methanation Catalyzed on Spatially Separate Pt and Co Nanoparticles. Simon Beaumont, Selim Alayoglu, Colin Specht, Norbert Kruse and Gabor A. Somorjai. *Nano Lett.* **14**, 4792-4796 (2014).
- 1128 (1177) Dramatically Different Kinetics and Mechanism at Solid/Liquid and Solid/Gas Interfaces for Catalytic Isopropanol Oxidation over Size-Controlled Platinum Nanoparticles. Hailiang Wang, Andras Sapi, Christopher Thompson, Fudong Liu,

Danylo Zherebetskyy, James krier, Lindsay Carl, Xiaojun Cai, Lin-Wang Wang, Gabor A. Somorjai. *J. Am. Chem. Soc.* **136**, 10515-10520 (2014).

- 1129 (1167) Promotional Effects of Mesoporous Zeolites with Pt Nanoparticle Catalysts during Reforming of Methylcyclopentane. Kyungsu Na, Nathan Musselwhite, Xiaojun Cai, Selim Alayoglu and Gabor A. Somorjai. *J. Phys. Chem. A* **118**, 8446-8452 (2014).
- 1130 (1178) Effects of Nanoparticle Size and Metal/Support Interactions in Pt-Catalyzed Methanol Oxidation Reactions in Gas and Liquid Phases. Hailiang Wang, Kwangjin An, Andras Sapi, Fudong Liu, Gabor A. Somorjai. *Cat. Lett.*, **144**, 1930-1938 (2014).
- 1131 (1182) Metal Nanocrystals Embedded in Single Nanocrystals of MOFs give Unusual Selectivity as Heterogeneous Catalysts. Kyungsu Na, Kyung Min Choi, Omar Yaghi and Gabor A. Somorjai. *Nano Lett.* **14** (10), 5979-5983 (2014)
- 1132 (1185) Time-Resolved (2 s) Study of the Initial Steps of Catalytic Hydrogenation of CO: From Branched Isomers to Unsaturated Molecules. Gerome Melaet, Walter Ralston, Wen-Chi Liu and Gabor A. Somorjai. *J. Phys. Chem. C* **118** 26921-26925 (2014).
- 1133 (1170) The Pathway to Total Isomer Selectivity: *n*-hexane Conversion (Reforming) on Platinum Nanoparticles Supported on Aluminum Modified Mesoporous Silica (MCF-17). Nathan Musselwhite, Kyungsu Na, Selim Alayoglu and Gabor A. Somorjai. *J. Am. Chem. Soc.* **136**, 16661-65 (2014)
- 1134 (1181) Sum Frequency Generation Vibrational Spectroscopy Study of 1,3-Butadiene Hydrogenation on 4 nm Pt@SiO₂, Pd@SiO₂ and Rh@SiO₂ Core-Shell Catalysts. James M. Krier, William D. Michalak, Xiaojun Cai, Lindsay Carl, Kyriakos Komvopoulos and Gabor A. Somorjai. *Nano Letters*, **15**, 39-44 (2014).
- 1135 (1183) Effect of Acidic Properties of Mesoporous Zeolites Supporting Pt Nanoparticles on Control on Hydrogenative Conversion of Methylcyclopentane. Kyungsu Na, Selim Alayoglu, Rong Ye and Gabor A. Somorjai. *J. Am. Chem. Soc.*, **136**, 17207-17212 (2014)
- 1136 (1184) Comparing the Catalytic Oxidation of Ethanol at the Solid-Gas and Solid-Liquid Interfaces over Size-Controlled Pt Nanoparticles: Striking Differences in Kinetics and Mechanisms. Andras Sapi, Fudong Liu, Xiaojun Cai, Chris M. Thompson, Hailiang Wang, Kwangjin An, James Krier and Gabor A. Somorjai. *Nano Letters* **14**, 6727-6730 (2014).

2015

- 1137 (1188) Hierarchically Nanoporous Zeolites and Their Heterogeneous Catalysis Current Status and Future Perspective. Kyungsu Na and Gabor A. Somorjai. *Cat. Lett.* **145**, 193-213 (2015).
- 1138 (1189) Polymer-encapsulated Metallic Nanoparticles as a Bridge Between Homogeneous and Heterogeneous Catalysis. Elad Gross, F. Dean Toste and Gabor A. Somorjai. *Cat. Lett.* **145**, 126-138 (2015).
- 1139 (1190) Nanocatalysis I: Synthesis of Metal and Bimetallic Nanoarticles and porous Oxides and Their Catalytic Reaction Studies. Kwangjin An and Gabor A. Somorjai. *Cat. Lett.* **145**, 233-248 (2015).
- 1140 (1191) Nanocatalysis II: *In Situ* Surface Probes of Nano-Catalysts and Correlative Structure-Reactivity Studies. Selim Alayoglu and Gabor A. Somorjai. *Cat. Lett.* **145**, 249-271 (2015).
- 1141 (1186) Atomic Scale Foundation of Covalent and Acid-base Catalysis in Reaction Selectivity and Turnover Rate. Nathan Musselwhite and Gabor A. Somorjai. *Topics in Catalysis* **58**, 184-189 (2015).
- 1142 (1187) Chemical Reaction-induced Hot Electron Flows on Pt Colloid Nanoparticles under Hydrogen Oxidation: Impact of Nanoparticle Size. Hyosun Lee, Levgen I. Nedrygailov, Changhwan Lee, Gabor a. Somorjai and Jeong Young Park. *Angewandte Chemie Int. Ed.* **15**, 2340-2344 (2015).
- 1143 (1192) High Performance Hybrid Oxide Catalyst of Manganese and Cobalt for Low Pressure Methanol Symthesis. Cheng-Shiun Li, Gerome Melaet, Walter T. Ralston, Kwangjin An, Christopher Brooks, Yifan Ye, Yi-Sheng Liu, Junfa Zhu, Jinghua Guo, Selim Alayoglu and Gabor A. Somorjai. *Nature Comm.* **6**, 6538 (2015).
- 1144 (1195) A Catalytic Path for Electrolyte Reduction in Lithium-Ion Cells Revealed by *In-Situ* Attenuated Total Reflection-Fourier Transform Infrared Spectroscopy. Feifei Shi,

Philip N. Ross, Hui Zhao, Gao Liu, Gabor A. Somorjai and Kyriakos Komvopoulos. *J. Am. Chem. Soc.* **137** (9), 3181-3184 (2015).

- 1145 (1146) The Role of Hot Electrons and Metal-Oxide Interfaces in Surface Chemistry and Catalytic Reactions. Jeong Y. Park, L. Robert Baker and Gabor A. Somorjai. *Chem. Rev.* **115** (8), 2781-2817 (2015).
- 1146 (1194) Synthesis and Structural Evolution of Nickel-Cobalt Nanoparticles under H₂ and CO₂. Sophie Carenco, Cheng-Hao Wu, Andrey Shavorskiy, Selim Alayoglu, Gabor A. Somorjai and Miquel Salmeron. *Small* **11** (25), 3045-3053 (2015).
- 1147 (1196) Reaction of CO with Preadsorbed Oxygen on Low-Index Copper Surfaces: An Ambient Pressure XPS and High Pressure STM Study. Baran Eren, Leonid Lichtenstein, Cheng Hao Wu, Hendrik Bluhm, Gabor A. Somorjai, Miquel Salmeron. *J. Phys. Chem. C* **119**, 14669-14674 (2015).
- 1148 (1198) Chemical Environment Control and Enhanced Catalytic Performance of Platinum Nanoparticles Embedded in Nanocrystalline Metal-Organic Frameworks. Kyung Min Choi, Kyungsu Na, Gabor A. Somorjai and Omar Yaghi. *J. Am. Chem. Soc.* **137** (24), 7810-7816 (2015).
- 1149 (1197) Conquering Catalyst Complexity: Nanoparticle Synthesis and Instrument Development for Molecular and Atomistic Characterization Under *In Situ* Conditions. Simon Beauont and Gabor A. Somorjai. *Topics in Catalysis* **58**, 560-572 (2015)
- 1150 (1180) Molecular Catalysis Science: Nanoparticle Synthesis and Instrument Development for Studies under Reaction Conditions. Elad Gross and Gabor A. Somorjai. *J. Catalysis* **328**, 91-101 (2015).
- 1151 (1199) Silica-supported Cationic Gold(I) Complexes at Heterogeneous Catalysts for Regio- and Enantioselective Lactonization Reactions. Xing-Zhong Zhu, Son C. Nguyen, Ying He, Fadekemi Oba, Qiao Zhang, Christian Canlas Gabor A. Somorjai, A. Paul Alivisatos and F. Dean Toste. *J. Am. Chem. Soc.* **137**, 7083-7086 (2015).
- 1152 (1200) Mesoporous Aluminosilicate Catalysts for the Selective Isomerization of n-Hexane: The Role of Surface Acidity and Platinum Metal. Nathan Musselwhite, Kyungsu Na, Kairat Sabyrov, Selim Alayoglu, Gabor Somorjai. *J. Am. Chem. Soc.* **137** (32), 10231-10237 (2015).
- 1153 (1201) In Situ Microscopy and Spectroscopy Applied to Surfaces at Work. Hui-Ling Han, Gerome Melaet, Selim Alayoglu, Gabor A. Somorjai. *ChemCatChem* **7**(22), 3625-3638 (2015).
- 1154 (1203) Ambient Pressure X-ray Spectroscopy for Probing Monometallic, Bimetallic, and Oxide-Metal Catalysts under Reactive Atmosphere and Catalytic Reaction

- Conditions. Selim Alayoglu, Gabor Somorjai. *Topics in Catalysis*, **59**(5), 420-438 (2015).
- 1155 (1205) Catalyst Chemical State during CO Oxidation Reaction on Cu(111) Studied with Ambient-Pressure X-ray Photoelectron Spectroscopy and Near Edge X-ray Adsorption Fine Structure Spectroscopy. Baran Eren, Christian Heine, Hendrik Bluhm, Gabor A. Somorjai, Miquel Salmeron. *J. Am. Chem. Soc* **137**, 11186-11190 (2015).
- 2016**
- 1156 (1208) Hot Electron Surface Chemistry at Oxide-Metal Interfaces: Foundation of Acid-Base Catalysis. Jeong Y. Park and Gabor A. Somorjai. *Cat. Lett.* **146**, 1-11 (2016)
- 1157 (1212) Activation of Cu(111) Surface by Decomposition into Nanoclusters driven by CO Adsorption. Baran Eren, Danylo Zherebetskyy, Laerte, L. Patera, Cheng Hao Wu, Hendrik Bluhm, Cristina Africh, Lin-Wang Wang, Gabor A. Somorjai, Miquel Salmeron. *Science*, **351**, 475-478 (2016).
- 1158 (1207) In-situ Potentiodynamic Analysis of the Electrolyte/Silicon Electrodes Interface Reactions – A Sum Frequency Generation Vibrational Spectroscopy Study. Yonatan Horowitz, Hui-Ling Han, Philip N. Ross and Gabor A. Somorjai. *J. Am. Chem. Soc.*, **138**, 726-729 (2016).
- 1159 (1211) One-dimensional Nanoclustering of the Cu(100) Surface under CO Gas in the mbar Pressure Range. B. Eren, D. Zherebetskyy, Y. Hao, L. L. Patera, L.-W. Wang, G. A. Somorjai, M. Salmeron. *Surf. Sci.*, **651**, 210-4 (2016).
- 1160 (1214) Structural changes of Cu(110) and Cu(110)-(2×1)-O Surfaces under Carbon Monoxide in the Torr Pressure Range Studied with Scanning Tunneling Microscopy and Infrared Reflection Absorption Spectroscopy. B. Eren, Z. Liu, D. Stacchiola, G. A. Somorjai, M. Salmeron, *J. Phys. Chem. C*, **120**, 8227-31 (2016).
- 1161 (1210) Molecular Catalysis Science: Perspective on Unifying the Fields of Catalysis. Rong Ye, Tyler Hurlburt, Kairat Sabyrov, Selim Alayoglu, Gabor A. Somorjai. *PNAS* **113**, 5159-5166 (2016).

- 1162 (1202) Product Distribution Change in the Early Stages of Carbon Monoxide Hydrogenation over Cobalt Magnesium Fischer-Tropsch Catalyst. Gerome Melaet, Walter Ralston, Wen-Chi Liu, Gabor Somorjai. *Catalysis Today* **262**, 69-73 (2016).
- 1163 (1217) Adsorption and reactions of water on oxygen pre-covered Cu(110) Zongqiang Pang, Stefan Duerrbeck, Chao Shun Kha, Erminald Bertel, Gabor A. Somorjai, and Miquel Salmeron. *J. Phys. Chem. C* **120**, 9218-9222 (2016)
- 1164 (1218) Growth and Structure of the First Layers of Ice on Ru(0001) and Pt(111), Sabine Maier, Barbara A. J. Lechner, Gabor A. Somorjai, and Miquel Salmeron. *J. Am. Chem. Soc.* **138**, 3145-3151 (2016)
- 1165 (1209) Cyclohexene and 1,4-Cyclohexadiene Hydrogenation Occur through Mutually Exclusive Intermediate Pathways on Platinum Nanoparticles. James M. Krier, Kyriakos Komvopoulos and Gabor A. Somorjai. *J. Phys. Chem. C* **120**, 8246-8250 (2016).
- 1166 (1219) Control of Model Catalytic Conversion Reaction over Pt Nanoparticle Supported Mesoporous BEA Zeolite Catalysts. Kyungsu Na, Yunwoong Yoon and Gabor A. Somorjai. *Catalysis Today* **265**, 225-230 (2016).
- 1167 (1206) Failure Mechanisms of Single-crystal Silicon Electrodes in Lithium-Ion Batteries. Feifei Shi, Zhichao Song, Philip N. Ross, Gabor A. Somorjai, Robert O. Ritchie, and Kyriakos Komvopoulos. *Nature Communications*. DOI: 10.1038/ncomms11886.
- 1168 (1215) Metal Nanoparticles Catalyzed Selective Carbon-Carbon Bond Activation in the Liquid Phase. Rong Ye, Bing Yuan, Jie Zhao, Walter Ralston, Chung-Yeh Wu, Ebru Unell Barin, Dean F. Toste, Gabor A. Somorjai. *J. Am. Chem. Soc.* **138**, 8533-8537 (2016).
- 1169 (1204) Co-Rh Nanoparticles for the Hydrogenation of Carbon Monoxide: Catalytic Performance Towards Alcohol Production and Ambient Pressure X-ray Photoelectron Spectroscopy Study. Wen-Chi Liu, Gerome Melaet, Walter T. Ralston, Selim Alayoglu, Yonatan Horowitz, Rong (Rocky) Ye, Tyler Hurlburt, Baohua Mao, Ethan Crumlin, Miquel Salmeron and Gabor Somorjai. *Catt. Lett.* **146**, 1475 (2016).
- 1170 (1212) Dissociative Carbon Dioxide Adsorption and Morphological Changes on Cu(100) and Cu(111) at Ambient Pressures. Baran Eren, Robert S. Weatherup, Nikos Liakakos, Gabor A. Somorjai, M. Salmeron. *J. Am. Chem. Soc.* **138**, 8207-8211 (2016)

- 1171 (1213) Influence of Dissolved O₂ in Organic Solvents on CuOEP Supramolecular Self-Assembly on Graphite. Yibo Hao, Robert S. Weatherup, Baran Eren, Gabor A. Somorjai and Miquel Salmeron. *Langmuir* **32**, 5526-5531 (2016).
- 1172 (1220) Insights into the Mechanism of Tandem Alkene Hydroformylation over Nanocrystalline Catalyst with Multiple Interfaces. Ji Su, Chenlu Xie, Chen Chen, Yi Yu, Griffin Kennedy, Gabor A. Somorjai and Peidong Yang. *J. Am. Chem. Soc.* **138**, 11568-11574 (2016).
- 1173 (1225) In Situ Spectroscopic Investigation into the Active Sites for Crotonaldehyde Hydrogenation at the Pt Nanoparticle-Co₃O₄ Interface. Griffin Kennedy, Gerome Melaet, Hui-Ling Han, Walter T. Ralston, and Gaor A. Somorjai. *ACS Catal.*, **6**, 7140-7147 (2016).
- 1174 (1226) Anisotropic Phase Segregation and Migration of Pt in Nanocrystals en route to Nanoframe Catalysts. Zhiqiang Niu, Nigel Becknell, Yi Yu, Dohyung Kim, Chen Chen, Nikolay Kornienko, Gabor A. Somorjai and Peidong Yang. *Nature Materials* **15**, 1188-1194 (2016).
- 1175 (1224) Copper Nanocrystals Encapsulated in Zr-based Metal-Organic Frameworks for Highly Selective CO₂ Hydrogenation to Methanol. Bunyarat Rungtaeweevoranit, Jayeon Baek, Joyce R. Araujo, Braulio S. Archanjo, Kyung Min Choi, Omar M. Yaghi and Gabor A. Somorjai. *Nano Lett* **16**, 7645-7649 (2016)
- 1176 (1230) Integration of the Three Fields of Catalysis: Heterogeneous, Homogeneous and Enzyme. Gabor A. Somorjai, Rong Ye, Tyler J. Hurlburt, Kairat Sabyrov. Presented at 24th Solvay Conference on Chemistry: Catalysis in Chemistry and Biology, in Brussels, Belgium 18th – 22 October 2016.

- 1177 (1227) New Insights into Aldol Reactions of Methyl Isocyanoacetate Catalyzed by Heterogenized Homogeneous Catalysts. Rong Ye, Jie Zhao, Bing Yuan, Wen-Chi Liu, Joyce Rodrigues De Araujo, Franco F. Faucher, Mathew Chang, Christoph V. Deraedt, F. Dean Toste, Gabor A. Somorjai. *Nano Lett.* **17**, 584-589 (2017).
- 1178 (1216) Site-selective Oxidative Coupling Reactions for the Attachment Enzymes to Glass Surfaces through DNA Directed Immobilization. Kanwal S. Palla, Tyler J. Hurlburt, Alexander M. Buyanin, Gabor A. Somorjai, and Matthew B. Francis. *J. Am. Chem. Soc.* **139**, 1967-1974 (2016).
- 1179 (1234) Morphology Effect on Charge Transport in Doped Bovine Serum Albumin Self-Assembled Monolayers. Edith Beilis, Yonatan Horowitz, Alon Givon, Gabor Somorjai, Hagai Cohen, Shachar Richter. *J. Phys. Chem. C*, **121**, 9579-9586 (2017)
- 1180 (1228) Platinum and Other Transition Metal Nanoclusters (Pd, Rh) Stabilized by PAMAM Dendrimer as Excellent Heterogeneous Catalysts: Application to the MethylCycloPentane (MCP) Hydrogenative Isomerization. Christophe Deraedt, Gerome Melaet, Walter Ralston, Rong Ye and Gabor A. Somorjai. *Nano Letters*. **17**, 1853-1862 (2017) DOI: 10.1021/acs.nanolett.6b05156
- 1181 (1223) Activation of Tungsten Oxide for Propane Dehydrogenation and Its High Catalytic Activity and Selectivity. Yongju Yun, Joyce R. Araujo, Gerome Melaet, Jayeon Baek, Braulio S. Archanjo, Myounghwan Oh, A. Paul Alivisatos, and Gabor A. Somorjai. *Catal. Lett*, **147**, 622 (2017)
- 1182 (1222) Hydroisomerization of *n*-Hexadecane: Remarkable Selectivity of Platinum Nanoparticles Supported on Mesoporous Silica Post-Synthetically Modified with Aluminum. Kairat Sabyrov, Nathan Musselwhite, Gerome Melaet, and Gabor A. Somorjai. *Catal. Sci. Technol.*, **7**, 1756-1765 (2017).
- 1183 (1229) Alcohol Oxidation at Platinum-Gas and Platinum-Liquid Interfaces: The Effect of Platinum Nanoparticle Size, Water Coadsorption, and Alcohol Concentration. Hironori Tatsumi, Fudong Liu, Hui-Ling Han, Lindsay M. Carl, Andras Sapi, and Gabor A. Somorjai. *J. Phys. Chem. C*, **121**, 7365-7371, (2017).
- 1184 (1235) A Comparison of Photo-catalytic Activities and of Gold Nanoparticles following Plasmonic and Interband Excitation and a Strategy for Harnessing Interband Hot Carriers for Solution Phase Oxidative Photo-catalysis. Jie Zhao, Song Nguyen, Rong Ye, Baihua Ye, Horst Weller, Gabor Somorjai, Paul Alivisatos, F. Dean Toste. *ACS Cent. Sci.* **3** 482-488 (2017).

- 1185 (1232) Evidence of Structure Sensitivity in the Fischer-Tropsch Research on Model Cobalt Nanoparticles by Time-Resolved Chemical Transient Kinetics. Walter T. Ralston, Gerome Melaet, Tommy Saephan and Gabor A. Somorjai. *Angew. Chem. Int. Ed.* **56** 1-6 (2017).
- 1186 (1236) The Chemistry of Electrolyte Reduction on Silicon Electrodes Revealed by *In Situ* ATR-FTIS Spectroscopy. Feifei Shi, Philip N. Ross, Gabor A. Somorjai, and Kyriakos Komvopoulos. *J. Phys. Chem. C*, **121**, 14476-14483 (2017).
- 1187 (1239) Supported Dendrimer-Encapsulated Metal Clusters: Toward Heterogenizing Homogeneous Catalysts. Rong Ye, Aleksandr Zhukhovitskiy, Christophe V. Deraedt, F. Dean Toste, Gabor A. Somorjai. *Acc. Chem. Res.* **50**, 1894-1901 (2017)
- 1188 (1244) Fluorinated End-Groups in Electrolytes Induce Ordered Electrolyte/Anode Interface Even at Open-Circuit Potential as Revealed by Sum Frequency Generation Vibrational Spectroscopy. Horowitz, Y.; Han, H. L.; Ralston, W. T.; de Araujo, J. R.; Kreidler, E.; Brooks, C.; Somorjai, G. A. *Advanced Energy Materials* 2017, 1602060.
- 1189 (1237) Oxidative Coupling of Methane (OCM): Effect of Noble Metal (M=Pt, Ir, Rh) Doping on the Performance of Mesoporous Silica MCF-17 Supported Mn_xOy-Na₂WO₄ Catalysts. Wen-Chi Liu, Walter T Ralston, Gerome Melaet, Gabor A. Somorjai. *Applied Catalysis A, General* **545**, 17-23 (2017)
- 1190 (1240) Tandem Catalysis for CO₂ Hydrogenation to C₂-C₄ Hydrocarbons. Chenlu Xie, Chen Chen, Yi Yu, Ji Su, Yifan Li, Gabor A. Somorjai and Peidong Yang. *Nano Letters* **17**, 3798-3802 (2017).
- 1191 (1242) Hydroisomerization of *n*-Hexane Using Acidified Metal-Organic Framework and Platinum Nanoparticles. Kairat Sabyrov, Juncong Jiang, Omar Yaghi, Gabor A. Somorjai. *J. Am. Chem. Soc.* **139**, 12382-12385 (2017).
- 1192 (1249) Dendrimer Stabilized Metal Nanoparticles as Efficient Catalysts for Reversible Dehydrogenation/Hydrogenation of N-Heterocycles. Christophe Deraedt, Rong Ye, Walter T. Ralston, F. Dean Toste and Gabor A. Somorjai. *J. Am. Chem. Soc.* **139**, 18084-18092 (2017).
- 1193 (1245) Richards Award Address. Molecular Catalysis Science. The Development of Surface Science toward Integration of Heterogeneous, Homogeneous, and Enzyme Catalysis on the Nanoscale. Gabor A. Somorjai. *The Nucleus*, March 2017.

2018

- 1194 (1243) Surface Structures of Model Metal Catalysts in Reactant Gasses. Franklin (Feng) Tao, Walter T. Ralston and Gabor A. Somorjai. *J. Phys. Chem. B*, **122**, 425-431 (2018).
- 1195 (1247) Fluoroethylene Carbonate as a Directing Agent in Amorphous Silicon Anodes – Electrolyte Interface Structure Probed by Sum Frequency Vibrational Spectroscopy and Ab-Inito Molecular Dynamics. Yonatan Horowitz, Hui-Ling Han, Fernando A. Soto, Walter T. Ralston, Perla B. Balbuena, and Gabor A. Somorjai. *Nano Lett.* **18**, 1145-1151 (2018)
- 1196 (1260) Development and Elucidation of Superior Turnover Rates and Selectivity of Supported Molecular Catalysts. Rong Ye, Whe-Chi Liu, Hui-Ling Han and Gabor A. Somorjai. *ChemCatChem.* **10**, 1-21 (2018).
- 1197 (1246) Identifying the Decomposition of Diethyl Carbonate in Binary Electrolyte Solution in Contact with Silicon Anodes - A Sum Frequency Generation Vibrational Spectroscopy Study. Yonatan Horowitz, Hui-Ling Han, and Gabor A. Somorjai. *Ind. Eng. Res.* **57**, 1480-1486 (2018).
- 1198 (1253) Supported Iron Catalysts for Michael Addition Reaction. Rong Ye, Franco F. Faucher and Gabor A. Somorjai. *Molecular Catalysis* **447** 65-71 (2018)
- 1199 (1259) Fluoroethylene Carbonate Induces Ordered Electrolyte Interface on Silicon and Sapphire Surfaces as Revealed by Sum Frequency Generation Vibrational Spectroscopy and X-ray Reflectivity. Yonatan Horowitz, Hans-Georg Steinrück, Hui-Ling Han, Chuntian Cao, Iwnetim Iwnetu Abate, Yuchi Tsao, Michael F. Toney and Gabor A. Somorjai. *Nano Lett.* **18**, 2105-2111 (2018).

Submitted

	(1233)	Significant Differences in Kinetics and Mechanisms of Catalytic 1-Propanol Oxidation on Size-Controlled Platinum Nanoparticles at Solid-Gas and Solid-Liquid Interfaces. Fudong Liu, Hui-Ling Han, Lindsay Carl, Danylo Zherebetskyy, Kwangjin An, Lin-Wang Wang and Gabor A. Somorjai. Submitted J. Phys. Chem honoring Hajo Freund
	(1241)	Strong Metal-Support Interactions between Nanoparticle Layers for Catalysts with Enhanced Methanol Oxidation Activity. Sinmyung Yoon, Kyunghwan Oh, Fudong Liu, Ji Hui Seo, Gabor A. Somorjai, Jun Hee Lee, Kwangjin An. Submitted to <i>ACS Catalysis</i> on January 20, 2018
	(1248)	A Review on <i>in situ</i> Sum Frequency Generation Vibrational Spectroscopy Studies of Liquid-Solid Interfaces in Electrochemical Systems. Hui-Lind Han, Yonatan Horowitz and Gabor A. Somorjai. Submitted to Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry.
	(1250)	The Effect of Aluminum and Platinum Additives on Hydrogen Adsorption on Mesoporous Silicates. Gerome Melaet, Vitalie Stavila, Lennie Klebanoff and Gabor A. Somorjai. Submitted to <i>Physical Chemistry Chemical Physics</i> on October 15. 2017
	(1251)	Surface Science Approach to the Molecular Level Integration of the Principles in Heterogeneous, Homogeneous, and Enzymatic Catalysis. Tyler J. Hurlburt, Wen-Chi Liu, Rong Ye and Gabor A. Somorjai. Submitted to <i>Topics in Catalysis</i> on October 25, 2017
	(1252)	Hybrids of Homogeneous, Heterogeneous, and Enzyme Catalysts for Optimized Performances. Rong Ye, Jie Zhao, Brent B. Wickemeyer, F. Dean Toste and Gabor A. Somorjai. Submitted to <i>Nature Catalysis</i> on 11/2/2017.
	(1254)	Identification of the Bronsted Acid Catalytic Site in Sulfated MOF-808. Christopher A. Trickett, Thomas M. Osborn Popp, Ji Su, ^{1,2} Chang Yan, Jonathan Weisberg, Ashfia Huq, Philipp Urban, Juncong Jiang, Markus J. Kalmutzki, Qingni Liu, Jayeon Baek, Martin P. Head-Gordon, Gabor A. Somorjai, ¹ Jeffrey A. Reimer, and Omar M. Yaghi. Submitted to <i>Nature Chemistry</i> on December 14, 2017.
	1255	Acidic Effect of Porous Alumina as Supports for Pt Nanoparticle Catalysts in n-Hexane Reforming. Euiseop Yang, Eun Jeong Jang, Jun Gyeong Lee, Lee Sinmyung, Jaekyoung Lee, Nathan Musselwhite, Gabor A. Somorjai, Ja Hun Kwak, Kwangjin An. Submitted to <i>ACS Applied Materials and Interfaces</i> on 20 January 22, 2018
	1256	The Structure of Copper-Cobalt Surface Alloys in Equilibrium with Carbon Monoxide Gas. Baran Eren, Daniel Torres, Osman Karslioğlu, Zongyuan Liu, Cheng Hao Wu, Dario Stacchiola, Hendrik Bluhm, Gabor Somorjai, Miquel Salmeron. Submitted to <i>J. Am. Chem. Soc.</i> On January 2

	1257	Supported Au Nanoparticles with N-Heterocyclic Carbene Ligands as Active and Stable Heterogeneous Catalysts of Lactonization. Rong Ye, Alexandr Zhukhovitskiy, Roman Kazantsev, Sirine Fakra, Brent Wickemeyer, Dean F. Toste, Gabor A. Somorjai. Submitted to J. Am. Chem. Soc. On January 30, 2018
	1258	The Methanol Economy: Methane and Carbon Dioxide Conversion. Wen-Chi Liu, Jayeon Baek and Gabor A. Somorjai. Submitted to Topics in Catalysis on January 15, 2018
	1260	Foundations and Strategies of the Construction of Hybrid Catalysts for Optimized Performances and New Products. Rong Ye, Jie Zhao, Brent B. Wickemeyer, F. Dean Toste and Gabor A. Somorjai. Submitted to Nature Catalysis