

LIST OF PUBLICATIONS

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PROFESSOR GABOR A. SOMORJAI

Materials Sciences Division
Lawrence Berkeley National Laboratory

and

Department of Chemistry
University of California
Berkeley, California
USA

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1990

- 508 (524) The Formation of Hydrogenated Amorphous Carbon Films of Controlled Hardness from a Methane Plasma, G.J. Vandentop, M. Kawasaki, R.M. Nix, I.G. Brown, M. Salmeron, and G.A. Somorjai, *Phys. Rev. B* **41**, 5 (1990). LBNL-27526
- 509 (522) Modern Concepts in Surface Science and Heterogeneous Catalysis, G.A. Somorjai, *J. Phys. Chem.* **94**, 1013-1023 (1990). LBNL-27396
- 510 (525) Scanning Tunneling Microscopy Study of the Structure of Sulfur ($2\sqrt{3}\times 2\sqrt{3}$)R30° Overlayer on Rhenium (0001), D.F. Ogletree, C. Ocal, B. Marchon, T. Beebe, W. Siekhaus, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **8**(1), 297 (1990). LBNL-27563
- 511 (521) Directed Search Methods for Surface Structure Determination by LEED, P.J. Rous, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **226**, 15 (1990). LBNL-27427
- 512 (523) Imaging of Biomolecules with the Scanning Tunneling Microscope: Problems and Prospects, M. Salmeron, T. Beebe, J. Odriozola, T. Wilson, D.F. Ogletree, W. Siekhaus, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **8**(1), 635 (1990). LBNL-27566
- 513 (534) Steam Gasification of Graphite and Chars at Temperatures <1000 K over Potassium-Calcium-Oxide Catalysts, P. Pereira, R. Csencsits, H. Heinemann, and G.A. Somorjai, *J. Catal.* **123**, 463-476 (1990). LBNL-27655
- 514 (528) Analysis of the Interface of Hydrogenated Amorphous Carbon Films on Silicon by Angle-Resolved X-Ray Photoelectron Spectroscopy, M. Kawasaki, G.J. Vandentop, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **227**, 261 (1990). LBNL-27757
- 515 (530) Kinetic Model for Cooperative Dissociative Chemisorption and Catalytic Activity via Surface Restructuring, R.D. Levine and G.A. Somorjai, *Surf. Sci.* **232**, 407 (1990). LBNL-28043
- 516 (533) Adsorbate-Induced Restructuring of Surfaces: Surface Thermodynamic Puzzle, G.A. Somorjai, *in Bonding Energetics in Organometallic Compounds*. Tobin J. Marks, ed. ACS Symposium Series 428, 218-238 (1990). LBNL-28070
- 517 (537) The Effect of Structure in Selective Oxide Catalysis: The Oxidation Reactions of Ethanol and Ethane on Vanadium Oxide, S.T. Oyama and G.A. Somorjai, *J. Phys. Chem.* **94**, 5022 (1990). LBNL-28055
- 518 (545) Hydrogenation of CO₂, Acetone, and CO on a Rh Foil Promoted by Titania Overlayers, K.J. Williams, A.B. Boffa, J. Lahtinen, M. Salmeron, A.T. Bell, and G.A. Somorjai, *Catal. Lett.* **5**, 385-394 (1990). LBNL-29100
- 519 (546) Kinetics of Ethane Oxidation on Vanadium Oxide, S. T. Oyama, A.M. Middlebrook, and G.A. Somorjai, *J. Phys. Chem.* **94**, 5029 (1990). LBNL-29024

- 520 (556) The Conversion of Methane to Ethylene and Ethane with Near Total Selectivity by Low Temperature (610°C) Oxydehydrogenation over a Calcium-Nickel-Potassium Oxide Catalyst, P. Pereira, S.H. Lee, H. Heinemann, and G.A. Somorjai, *Catal. Lett.* **6**, 255-262 (1990). LBNL-29454
- 521 (543) Surface Studies of Zinc Oxide Growth on Cu(110), S. Fu and G.A. Somorjai, *Surf. Sci.* **237**, 87 (1990). LBNL-29027
- 522 (542) An Ultrahigh Vacuum Scanning Tunneling Microscope for Surface Science Studies, D.M. Zeglinski, D.F. Ogletree, T.P. Beebe, Jr., R.Q. Hwang, M.B. Salmeron, and G.A. Somorjai, *Rev. Sci. Instrum.* **61**(12), 3769 (1990). LBNL-28848
- 523 (529) The Preparation and Reactivity of Thin, Ordered Films of Vanadium Oxide on Au(111), K.B. Lewis, S.T. Oyama, and G.A. Somorjai, *Surf. Sci.* **233**, 75 (1990). LBNL-28030
- 524 (561) The Structure Sensitivity and Insensitivity of Catalytic Reactions in Light of the Adsorbate Induced Dynamic Restructuring of Surfaces, G.A. Somorjai, *Catal. Lett.* **7**, 169 (1990). LBNL-29110
- 525 (539) The Epitaxial Growth of Zirconium Oxide Thin Films on Pt(111) Single Crystal Surfaces, V. Maurice, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **237**, 116 (1990). LBNL-28699.
- 526 (538) A Real-Space Multiple Scattering Theory of Low Energy Electron Diffraction: A New Approach for the Structure Determination of Stepped Surfaces, P.J. Rous, X.-G. Zhang, J.M. MacLaren, A. Gonis, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **239**, 103 (1990). LBNL-29082
- 527 (540) Surface Science Studies of Cobalt Overlayers on Clean and Sulfur Covered Mo(100) Single Crystal Surfaces, C.C. Knight and G.A. Somorjai, *Surf. Sci.* **240**, 101 (1990). LBNL-28834
- 528 (499) The Surface Science of Catalysis and Photocatalysis, G.A. Somorjai, *Photocatalysis*, Chapter 9 (1990). LBNL-28917
- 529 (536) Structural Effects in the Selective Oxidation of Ethanol and Ethane on Vanadium Oxide, S.T. Oyama and G.A. Somorjai, *Am. Chem. Soc. Div. Pet. Chem.* **35**, 196 (1990).
- 530 (544) The Catalyzed Hydrogenation of Carbon Monoxide an Overview and Future Directions, G.A. Somorjai, in *New Trends in CO Activation*. L. Guzzi, ed. Elsevier Sci. Publ. Co, Amsterdam, 1990. LBNL-29083

1991

- 531 (563) Induced Ordering of Ethylidyne on the Pd(111) Surface by the Pre-Adsorption of Oxygen: A LEED and HREELS Study, P.A.P. Nascente, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **253**, 167-176 (1991). LBNL-39884
- 532 (550) Adsorption of NO and NH₃ on Vanadia-Titania Catalysts. ESR and XPS Studies of the Adsorption, J.A. Odriozola, J. Soria, H. Heinemann, J.F. Garcia de la Banda, M. Lopez Granados, J.C. Conesa, and G.A. Somorjai, *J. Phys. Chem.* **95**, 240-246 (1991). LBNL-26825
- 533 (547) The Surface Oxidation of Alpha-Silicon Carbide by O₂ from 300K to 1373K, J.M. Powers and G.A. Somorjai, *Surf. Sci.* **244**, 39-50 (1991). LBNL-29191
- 534 (581) The Catalytic Reduction of Nitric Oxide by Ammonia over a Clean and Vanadium Oxide-Coated Platinum Foil, M.F.H. van Tol, M.A. Quinlan, F. Luck, B.E. Nieuwenhuys, and G.A. Somorjai, *J. Catal.* **129**, 186-194 (1991).
- 535 (555) Scanning Tunneling Microscopy Studies of Sulfur Overlayers on the Re(0001) Surface, D.F. Ogletree, R.Q. Hwang, D.M. Zeglinski, A. Lopez Vazquez-de-Parga, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci. Technol. B* **9**(2), 886-890 (1991). LBNL-29369
- 536 (548) Adsorbate Induced Restructuring of Surfaces during Catalytic Reactions: The Dynamic Surface Structure Model of Reactivity, G.A. Somorjai, *in Catalytic Science and Technology*, vol. 1, 15-29 (1991). LBNL-29220
- 537 (560) Preparation and Characterization of Amorphous SiC:H Thin Films, M.P. Delplancke, J.M. Powers, G.J. Vandentop, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **9**(3), 450-455 (1991). LBNL-29623
- 538 (564) The Effect of Ion Energy Flux on the Properties of Hydrogenated Amorphous Carbon Films, G.J. Vandentop, M. Kawasaki, K. Kobayashi, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **9**(3), 1157-1161 (1991). LBNL-29958
- 539 (565) Zinc Oxide and Oxygen Overlayers on Cu (110): A Model for Cu-Zn-O Catalysts, S.S. Fu and G.A. Somorjai, Proceedings for the International Conference on Solid Films and Surfaces 5, *Appl. Surf. Sci.* **48/49**, 93-103 (1991). LBNL-30193
- 540 (578) The Catalytic Low Temperature Oxydehydrogenation of Methane: Temperature Dependence, Carbon Balance and Effects of Catalyst Composition, J. Raskó, P. Pereira, H. Heinemann, and G.A. Somorjai, *Catal. Lett.* **9**, 395-402 (1991). LBNL-30667
- 541 (470) A Surface Science and Catalytic Study of the Effects of Aluminum Oxide and Potassium on the Ammonia Synthesis over Iron Single-Crystal Surfaces, D.R. Strongin and G.A. Somorjai, *in Catalytic Ammonia Synthesis: Fundamentals and Practice.* J.R. Jennings, ed. Plenum Publishing, 1991. pp. 133-177. LBNL-23752

- 542 (571) Directions of Theoretical and Experimental Investigations into the Mechanisms of Heterogeneous Catalysis, G.A. Somorjai, *Catal. Lett.* **9**, 311-328 (1991). LBNL-30471
- 543 (559) A Diffuse LEED Study of the Adsorption Structure of Disordered Benzene on Pt(111), A. Wander, G. Held, R.Q. Hwang, G.S. Blackman, M.L. Xu, P. de Andres, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **249**, 21-34 (1991). LBNL-29475
- 544 (558) Observation of the Initial Stages of Growth of Hydrogenated Amorphous Carbon Films by Scanning Tunneling Microscopy, G.J. Vandentop, P.A.P. Nascente, M. Kawasaki, D.F. Ogletree, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci. Technol.* **A9**(4) 2273-2278 (1991). LBNL-29459
- 545 (554) Formation of Sulfur Clusters on Re(0001) Surfaces Observed with the Scanning Tunneling Microscope, R.Q. Hwang, D.M. Zeglinski, A. Lopez Vazquez-de-Parga, D.F. Ogletree, D.R. Denley, M. Salmeron, and G.A. Somorjai, *Phys. Rev. B* **44**(4), 1914-1917 (1991). LBNL-29333
- 546 (567) The Effects of Titania Overlayers on C₂H₄/CO/H₂ Reactions over a Rh Foil, K.J. Williams, A.B. Boffa, M. Salmeron, A.T. Bell, and G.A. Somorjai, *Catal. Lett.* **11**, 77-88 (1991). LBNL-30394
- 547 (577) Molecule-Induced Displacive Reconstruction in a Substrate Surface: Ethylidyne Adsorbed on Rh(111) Studied by Low-Energy-Electron Diffraction, A. Wander, M.A. Van Hove, and G.A. Somorjai, *Phys. Rev. Lett.* **67**(5), 626-628 (1991). LBNL-30662
- 548 (526) The Surface Science of Catalytic Hydrocarbon Conversion over Platinum, *in The Kendall Award Addresses 1973-1990*. Tomlinson Fort and Karol J. Mysels, eds. American Chemical Society, 1991. pp. 165-171
- 549 (549) The Effect of Vanadium Oxide Surface Structure in the Selective Oxidation of Ethanol and Ethane, S.T. Oyama and G.A. Somorjai, Proc. TOCAT 1, Tokyo, Japan, *Cat. Sci. and Tech.* **1**(11), 219 (1991). LBNL-29201
- 550 (553) The Puzzles of Surface Science and Recent Attempts To Explain Them, G.A. Somorjai, Proceedings of Yamada Conference XXVI, *Surf. Sci.* **242**, 481-488 (1991). LBNL-29277
- 551 (591) Model Silica-Alumina Acid Catalysts for Surface Science and Catalysis Studies Prepared by Argon Ion Beam Sputter Deposition Using HY-Zeolite Targets, I. Böszörményi, T. Nakayama, B. McIntyre, and G.A. Somorjai, *Catal. Lett.* **10**, 343-356 (1991). LBNL-31224
- 552 (562) The Bonding of Diethyl Ether, Ethanol and Their Fluorinated Analogs to Zirconium Oxide Thin Films, V. Maurice, K. Takeuchi, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **250**, 99-111 (1991). LBNL-29487
- 553 (557) Preparation of Si_xC_yH₂ Films from Methylsilane by Plasma Enhanced Chemical Vapor Deposition, M.P. Delplancke, J.M. Powers, G.J. Vandentop, and G.A. Somorjai, *Thin Solid Films* **202**, 289 (1991). LBNL-29461

- 554 (568) The Kinetics of CO₂ Hydrogenation on a Rh Foil Promoted by Titania Overlayers, K.J. Williams, A.B. Boffa, M. Salmeron, A.T. Bell, and G.A. Somorjai, *Catal. Lett.* **9**, 415-426 (1991). LBNL-30393
- 555 (576) Reduction of Nitric Oxide by Ammonia at Atmospheric Pressures over Platinum Polycrystalline Foils as Model Catalysts, T. Katona, L. Guzzi, and G.A. Somorjai, *J. Catal.* **132**, 440-450 (1991). LBNL-30579
- 556 (569) TPD Studies of Vanadium Oxide Films Deposited on Gold, K.B. Lewis, S.T. Oyama, and G.A. Somorjai, *Appl. Surf. Sci.* **52**(3), 241-248 (1991). LBNL-30367
- 557 (588) The Flexible Surface: Correlation between Reactivity and Restructuring Ability, G.A. Somorjai, *Langmuir* **7**, 3176-3182 (1991). LBNL-31148
- 558 (566) Structural Analysis of the *b*-SiC(100)-*c*(2x2) Surface Reconstruction by Automated Tensor Low-Energy Electron Diffraction, J.M. Powers, A. Wander, P.J. Rous, M.A. Van Hove, and G.A. Somorjai, *Phys. Rev. B* **44**(20), 159-166 (1991). LBNL-30413
- 559 (551) A Directed LEED Search for Many Structural Parameters: Substrate Relaxations and Buckling in Mo(100)-*c*(2x2)-*C* and -*S*, P. Rous, D. Jentz, D.G. Kelly, R.Q. Hwang, M.A. Van Hove, and G.A. Somorjai, *The Structure of Surfaces III*, Proc. ICSOS-3. S.Y. Tong, M.A. Van Hove, K. Takayanagi, and X.D. Xie, eds. Springer-Verlag: Berlin, Heidelberg, New York, 1991. p. 432. LBNL-29279
- 560 (552) Real-Space Multiple Scattering Theory Calculations of LEED Intensities for Stepped Surfaces, H.-G. Zhang, P.J. Rous, J.M. MacLaren, A. Gonis, M.A. Van Hove, and G.A. Somorjai, *The Structure of Surfaces III*, Proc. ICSOS-3. S.Y. Tong, M.A. Van Hove, K. Takayanagi and X.D. Xie, eds. Springer-Verlag: Berlin, Heidelberg, New York, 1991. p. 144. LBNL-29082
- 561 (599) Oxygen Induced Ordering of Ethylidyne on the Pd(111) Surface Investigated by Low Energy Electrons, P.A.P. Nascente, M.A. Van Hove, and G.A. Somorjai, in *Proceedings ELAF91*, World Scientific: Singapore, 1991. LBNL-31489
- 562 (579) Efficient Determination of Multilayer Relaxation in the Pt(210) Stepped and Densely Kinked Surface, X.-G. Zhang, M.A. Van Hove, P.J. Rous, D. Tobin, A. Gonis, J.M. MacLaren, K. Heinz, M. Michl, H. Lindner, K. Müller, M. Ehsasi, J.H. Block, and G.A. Somorjai, *Phys. Rev. Lett.* **67**(10), 1298 (1991). LBNL-30745

1992

- 563 (606) Molekuláris Adszorpció és Katalízis; az Átmeneti Fémek Felületi Kémiája (Molecular Adsorption and Catalysis: Surface Chemistry of Transition Metals), G.A. Somorjai, *Magy. Kem. Foly.* **98**, 1-14 (1992).
- 564 (584) Structural Analysis of the *b*-SiC(100)-(2x1) Surface Reconstruction by Automated Tensor LEED, J.M. Powers, A. Wander, M. Van Hove, and G.A. Somorjai, *Surf. Sci. Lett.* **260**, L7-L10 (1992). LBNL-31091
- 565 (535) Correlations and Differences between Homogeneous and Heterogeneous Catalysis—A Surface Science View, G.A. Somorjai, in *Perspectives in Catalysis*. J.A. Thomas and K.I. Zamaraev, eds. Blackwell Science Publications: London, 1992. pp. 147-167. LBNL-28137
- 566 (580) A New Pulse Counting Low-Energy Electron Diffraction System Based on a Position Sensitive Detector, D.F. Ogletree, G.S. Blackman, R.Q. Hwang, U. Starke, J.E. Katz, and G.A. Somorjai, *Rev. Sci. Instrum.* **63**(1), 104-113 (1992). LBNL-30746
- 567 (570) The Effect of Ion Energy on the Formation of the Silicon Carbide Interface of Hydrogenated Amorphous Carbon Films Grown on Silicon by Plasma Assisted Chemical Vapor Deposition, M. Kawasaki, G.J. Vandentop, and G.A. Somorjai, *Surf. Sci.* **260**, 85-96 (1992). LBNL-32207
- 568 (597) The Experimental Evidence of the Role of Surface Restructuring during Catalytic Reactions, G.A. Somorjai, *Catal. Lett.* **12**, 17 -34 (1992). LBNL-31507
- 569 (586) The Effects of Rhenium and Sulfur on the Reactivity and Selectivity of Pt Single-Crystal Catalysts, C. Kim and G.A. Somorjai, *J. Catal.* **134**, 179-185 (1992). LBNL-31106
- 570 (582) The Angular Dependence of Diffuse LEED Intensities and Its Structural Information Content, K. Heinz, U. Starke, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **261**, 57-63 (1992). LBNL-30767
- 571 (600) A Comparative Study of ZnO_x Overlayers on Cu(311), Cu(110), and a High Defect Concentration Cu(111), S.S. Fu and G.A. Somorjai, *Langmuir* **8**(2), 518-524 (1992). LBNL-31593
- 572 (587) Building of Complex Catalysts on Single Crystal Surfaces, C.M. Kim, C. Knight, and G.A. Somorjai, in *Surface Science of Catalysis; In Situ Probes and Reaction Kinetics*. D.J. Dwyer and F. Hoffmann, eds. American Chemical Society: Washington, DC, 1992. pp. 108-129. LBNL-31147
- 573 (572) The Surface Science Concepts of Heterogeneous Catalysis: The Building of Complex Catalysts Systems on Single Crystal Surfaces, G.A. Somorjai, *Catalysis Today* **12**, 343-353 (1992). LBNL-30496
- 574 (575) Interactions of O₂, CO, CO₂, and D₂ with the Stepped Cu(311) Crystal Face: Comparison to Cu(110), S.S. Fu and G.A. Somorjai, *Surf. Sci.* **262**, 68-76 (1992). LBNL-30575

- 575 (573) The Role of Sulfur in Modifying the Friction and Lubricity of Metal Surfaces, M. Salmeron and G.A. Somorjai, in *Surface Science Investigations in Tribology*. Y.-W. Chung, A.M. Homola, and G.B. Street, eds. American Chemical Society: Washington DC, 1992. pp. 103-111. LBNL-30532
- 576 (598) The Catalytic Low Temperature Oxydehydrogenation of Methane to Higher Hydrocarbons with Very High Selectivity at 8-12% Conversion, J. Raskó, H. Heinemann, and G.A. Somorjai, *Applied Catalysis A: General* **84**(1), 57-75 (1992). LBNL-31414
- 577 (589) Monolayer Surface Structure Analysis, G.A. Somorjai and U. Starke, *Pure & Appl. Chem.* **64**(4), 409 (1992). LBNL-31149
- 578 (590) Growth, Structure, and Chemical Properties of FeO Overlayers on Pt(100) and Pt(111), G. Vurens, V. Maurice, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **268**, 170-178 (1992). LBNL-30914
- 579 (585) The Reduction of Nitric Oxide by Ammonia over Polycrystalline Platinum Model Catalysts in the Presence of Oxygen, T. Katona, L. Guzzi, and G.A. Somorjai, *J. Catal.* **135**(2), 434-443 (1992). LBNL-31092
- 580 (574) The Roles of Chemisorbed Oxygen and Zinc Oxide Islands on Cu(110) Surfaces for Methanol Decomposition, S.S. Fu and G.A. Somorjai, *J. Phys. Chem.* **96**, 4542-4549 (1992). LBNL-30576
- 581 (596) Oscillations in the Reaction Rate of Nitric Oxide Reduction by Ammonia over Polycrystalline Platinum Foil Catalysts, T. Katona and G.A. Somorjai, *J. Phys. Chem.* **96**, 5465-5472 (1992). LBNL-31516
- 582 (593) The Frontiers of Surface Structure Analysis, G.A. Somorjai, *Surface and Interface Analysis* **19**, 493-507 (1992). LBNL-31364
- 583 (601) The Structure of Sulfur Overlayers on Stepped Mo(910) and Kinked Mo(28,4,1) Single Crystal Surfaces, C. Knight and G.A. Somorjai, *Surf. Sci.* **272**, 326-333 (1992). LBNL-31600
- 584 (592) Low-Energy Electron Diffraction Study of a Disordered Monolayer of H₂O on Pt(111) and an Ordered Thin Film of Ice Grown on Pt(111), U. Starke, K. Heinz, N. Materer, A. Wander, M. Michl, R. Döll, M.A. Van Hove, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **10**(4), 2521-2528 (1992). LBNL-31322
- 585 (583) Catalytic Steam Gasification of Coals, P. Pereira, H. Heinemann, and G.A. Somorjai, *Energy and Fuels* **6**, 407-410 (1992). LBNL-30609
- 586 (613) A Scanning Tunneling Microscope that Operates at High Pressures and High Temperatures (430K) and during Catalytic Reactions, B.J. McIntyre, M.B. Salmeron, and G.A. Somorjai, *Catal. Lett.* **14**, 263-269 (1992). LBNL-32303

- 587 (611) Building and Characterization of Catalysts on Single Crystal Surfaces, G.A. Somorjai, *Catal. Lett.* **15**, 25-37 (1992). LBNL-32381
- 588 (603) Preparation of Monolayers of Re and Pt on Metal Substrates Using a Pulsed Metal Plasma Deposition Source, C. Kim, D.F. Ogletree, M.B. Salmeron, X. Godechot, I.G. Brown, and G.A. Somorjai, *Appl. Surf. Sci.* **59**, 261-266 (1992). LBNL-31808
- 589 (595) The Ordering of Ethylidyne on Clean and Adsorbate Covered Pd(111): The Influence of the Coadsorption of Oxygen, P.A.P. Nascente, M.A. Van Hove, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **10**, 2342-2346 (1992). LBNL-31488
- 590 (624) Oxidative Coupling of Methane at 600°C on CaNiK Oxide Catalysts, D.M. Ginter, E. Magni, H. Heinemann, and G.A. Somorjai, *Catal. Lett.* **16**, 197-201 (1992). LBNL-32814
- 591 (608) Vibrational Spectra and Thermal Decomposition of Methylamine and Ethylamine on Ni(111), D. Gardin and G.A. Somorjai, *J. Phys. Chem.* **96**, 9424-9431 (1992). LBNL-32340
- 592 (607) The Bonding of Hydrogenated and Fluorinated Diethers to Pt(111) and to Zirconium Oxide Thin Film, K. Takeuchi, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **279**, 328-340 (1992). LBNL-31413

1993

- 593 (615) Vanadium Oxide Deposited on a Rh Foil: CO and CO₂ Hydrogenation Reactivity, A. Boffa, A.T. Bell, and G.A. Somorjai, *J. Catal.* **139**, 602-610 (1993). LBNL-32298
- 594 (602) The Structure and Thermal Decomposition of Para- and Ortho-xylene on Pt(111): A HREELS, LEED, and TPD Study, D.E. Wilk, C.D. Stanners, Y.R. Shen, and G.A. Somorjai, *Surf. Sci.* **280**, 298 (1993). LBNL-31805
- 595 (614) The Influence of Sulfur Adsorption on the Step Structure of Vicinal Mo(100): A LEED and STM Study, J. Dunphy, C. Knight, P. Sautet, D.F. Ogletree, M.B. Salmeron, and G.A. Somorjai, *Surf. Sci.* **280**, 313-324 (1993). LBNL-32578
- 596 (627) Oxydehydrogenation of Ethane over ZSM-5 Zeolite Catalysts—Effect of Steam, Y.-F. Chang, H. Heinemann, and G.A. Somorjai, *Appl. Cat. A: General* **96**, 305-318 (1993). LBNL-32922
- 597 (632) A Variable Pressure/Temperature Scanning Tunneling Microscope for Surface Science and Catalysis Studies, B. McIntyre, M. Salmeron, and G.A. Somorjai, *Rev. Sci. Instrum.* **64**(3), 687-691 (1993). LBNL-32757
- 598 (612) The Oxidative Dehydrogenation of Ethane over Molybdenum-Vanadium-Niobium Oxide Catalysts: The Role of Catalyst Composition, O. Desponds, R.L. Keiski, and G.A. Somorjai, *Catal. Lett.* **19**(1), 17-32 (1993). LBNL-32471
- 599 (626) Oxidative Coupling of Methane over Mg-Li Oxide Catalysts at Relatively Low Temperature—The Effect of Steam, Y.-F. Chang, H. Heinemann, and G.A. Somorjai, *J. Catal.* **141**, 713-720 (1993). LBNL-32919
- 600 (630) An Ultrahigh Vacuum Chamber Equipped with a Liquid Phase Reaction Cell, D.E. Gardin and G.A. Somorjai, *Rev. Sci. Instrum.* **64**(5), 1304 (1993). LBNL-33100
- 601 (622) Adsorption of Substituted Benzenes on Polycrystalline Gold and on Zinc Oxide and Iron Oxide Overlayers, M. Nakazawa and G.A. Somorjai, *Applied Surf. Sci.* **68**(4), 517-537 (1993). LBNL-32797
- 602 (621) A Study of the Adsorption of Selected Organic Molecules to Model the Adhesion of Epoxy Resins: Thermal Desorption of Glycidyl and Phenoxy Compounds from Gold, Iron Oxide, and Zinc Oxide, M. Nakazawa and G.A. Somorjai, *Applied Surf. Sci.* **68**(4), 539 (1993). LBNL-32796
- 603 (628) Ethylidyne on Pt(111): Determination of Adsorption Site, Substrate Relaxation, and Coverage by Automated Tensor LEED, U. Starke, A. Barbieri, N. Materer, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **286**, 1-14 (1993). LBNL-32969
- 604 (629) Factors Affecting the Reactivity of Chars and Cokes during Low Temperature (640° C) Steam Gasification, D.M. Ginter, H. Heinemann, and G.A. Somorjai, *Energy and Fuels* **7**, 393-398 (1993). LBNL-33064

- 605 (623) Carbon Monoxide Hydrogenation on Cobalt Foil and on Thin Cobalt Film Model Catalysts, J. Lahtinen, T. Anraku, and G.A. Somorjai, *J. Catal.* **142**, 206 -225 (1993). LBNL-32798
- 606 (625) Molecular Modeling of Amine Dehydrogenation on Ni(111), P.D. Ditlevsen, D.E. Gardin, M.A. Van Hove, and G.A. Somorjai, *Langmuir* **9**(6), 1500-1503 (1993). LBNL-32859
- 607 (619) A Low-Energy Electron Diffraction Study of Oxygen, Water, and Ice Adsorption on Pt(111), U. Starke, N. Materer, A. Barbieri, R. Döll, K. Heinz, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **287**, 432-437 (1993). LBNL-32781
- 608 (633) Surface Science as a Basis for Understanding Heterogeneous Catalysis, Series C: Mathematical and Physical Sciences, G.A. Somorjai, in *Elementary Reaction Steps in Heterogeneous Catalysis* **398**, 3. R.W. Joyner and R.A. van Santen, eds. Kluwer Academic Publishers: Dordrecht, 1993. pp. 3-33. LBNL-33702
- 609 (635) A Temperature Programmed Isotope Exchange Study of Ca-Ni-K and Mg-Li Oxide Catalysts Used for Oxidative Coupling of Methane, Y.-F. Chang, H. Heinemann, and G.A. Somorjai, *J. Catal.* **142**, 697-707 (1993). LBNL-33508
- 610 (639) The Preparation and Structure of 1-8 Monolayer Thick Epitaxial Iron Oxide Films Grown on Pt(111), W. Weiss and G.A. Somorjai, *J. Vac. Sci. Technol. A* **11**(4), 2138-2144 (1993). LBNL-33742
- 611 (620) Fitting Dozens of Coordinates by LEED: Automated Determination of Complex Surface Structures, M.A. Van Hove, W. Moritz, H. Over, P.J. Rous, A. Wander, A. Barbieri, N. Materer, U. Starke, D. Jentz, J.M. Powers, G. Held, and G.A. Somorjai, *Surf. Sci.* **287/288**, 428-431 (1993). LBNL-32780
- 612 (616) Kinetics of the Water-Gas Shift Reaction over Several Alkane Activation and Water-Gas Shift Catalysts, R.L. Keiski, O. Desponds, Y.-F. Chang, and G.A. Somorjai, *Appl. Cat. A: General* **101**, 317-338 (1993). LBNL-32753
- 613 (650) Surface Structure Determination of an Oxide Film Grown on a Foreign Substrate: Fe₃O₄ Multilayer on Pt(111) Identified by Low Energy Electron Diffraction, W. Weiss, A. Barbieri, M.A. Van Hove, and G.A. Somorjai, *Phys. Rev. Lett.* **71**(12), 1848-1851 (1993). LBNL-34260
- 614 (638) Hollow-Site Molecular Adsorption for NO on Pt(111) and Ni(111): Invalidating Vibrational Site Assignment Rules, N. Materer, A. Barbieri, D. Gardin, U. Starke, J.D. Batteas, M.A. Van Hove, and G.A. Somorjai, *Phys. Rev. B-Condensed Matter* **48**(4), 2859-2861 (1993). LBNL-33680
- 615 (631) Combined Surface Characterization and Tribological (Friction and Wear) Studies of CVD Diamond Films, S.S. Perry, J.W. Ager III, and G.A. Somorjai, *J. Mat. Res.* **8**(10), 2577-2586 (1993). LBNL-33277

- 616 (647) Carbon, Nitrogen, and Sulfur on Ni(111): Formation of Complex Structures and Consequences for Molecular Decomposition, D.E. Gardin, J.D. Batteas, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **296**, 25-35 (1993). LBNL-34194
- 617 (634) Heterogeneous Catalysis: Future Opportunities in a Historical Perspective, G.A. Somorjai, *Catalysis Today* **18**, 113-123 (1993). LBNL-33494
- 618 (643) A LEED, TDS, and HREELS Study of CO Adsorbed on the Rh(311) Stepped Surface, J.D. Batteas, D.E. Gardin, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **297**(1), 11-18 (1993). LBNL-33964
- 619 (609) Molecular Modeling of Ethylene Decomposition on Platinum Surfaces, P.D. Ditlevsen, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **292**, 267-275 (1993). LBNL-32343
- 620 (617) Automated Determination of Complex Surface Structures by LEED, M.A. Van Hove, W. Moritz, H. Over, P.J. Rous, A. Wander, A. Barbieri, N. Materer, U. Starke, and G.A. Somorjai, *Surf. Sci. Repts.* **19**, 191-229 (1993). LBNL-32752
- 621 (636) *In Situ* Scanning Tunneling Microscopy Study of Platinum (110) in a Reactor Cell at High Pressures and Temperatures, B.J. McIntyre, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci. Technol. A* **11**(4), 1964-1968 (1993). LBNL-32968
- 622 (637) The Structure and Reactivity of Oxide Thin Films Grown on Transition Metal Surfaces, W. Weiß, A.B. Boffa, J.C. Dunphy, H.C. Galloway, M.B. Salmeron, and G.A. Somorjai, in *Adsorption on Ordered Surfaces of Ionic Solids and Thin Films: Proceedings of the 106th WE-Heraeus Seminar, Bad Honnef, Germany, February 15-18, 1993*. No. 33 in Springer Series in Surface Sciences. H.-J. Freund and E. Umbach, eds. Springer-Verlag: Heidelberg, 1993. pp. 221-229. LBNL-33653
- 623 (541) Surface Crystallography by Low-Energy Electron Diffraction, M.A. Van Hove and G.A. Somorjai, in *Investigations of Surfaces and Interfaces*. B.W. Rossiter and R.C. Baetzold, eds. Wiley-Interscience: New York, 1993. pp. 1-40. LBNL-27397
- 624 (646) Interface Characterization of Chemically Vapor Deposited Diamond on Titanium and Ti-6Al-4V, S.S. Perry, J.W. Ager III, R.J. McClelland, M.D. Drory, and G.A. Somorjai, *J. Appl. Physics* **74**(12), 7542-7550 (1993). LBNL-34192
- 625 (697) The Effect of the Oxygen Preadsorption on the Adsorption of Nitric Oxide on Mo(111), G.-J. Wang, K.B. Lewis, and G.A. Somorjai, *Chemical Research in Chinese Universities* **9**(3), 214-219 (1993). LBNL-37063

1994

- 626 (654) Hydrocarbon Conversion Reactions over the Pt-Re Bimetallic Catalysts Modified by Sulfur, C.-M. Kim and G.A. Somorjai, in *Catalysis of Organic Reactions*. Marcel Dekker, Inc.: New York, 1994. pp. 511-514. LBNL-34399
- 627 (641) The Surface Science of Heterogeneous Catalysis, G.A. Somorjai, *Surf. Sci.* **299/300**(1-3), 849-866 (1994). LBNL-33935
- 628 (640) Adsorption and Adsorbate-Induced Restructuring: A LEED Perspective, M.A. Van Hove and G.A. Somorjai, *Surf. Sci.* **299/300**, 487-501 (1994). LBNL-33785
- 629 (672) Magnetite Fe₃O₄(111): Surface Structure by LEED Crystallography and Energetics, A. Barbieri, W. Weiss, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **302**, 259-279 (1994). LBNL-35311
- 630 (670) Characterization of Organic Surfaces, S.S. Perry and G.A. Somorjai, *Analyt. Chem.* **66**(7), 403A-415A (1994). LBNL-35163
- 631 (674) C, CO, and CO₂ Hydrogenation on Cobalt Foil Model Catalysts: Evidence for the Need of CoO Reduction, J. Lahtinen, T. Anraku, and G.A. Somorjai. *Catal. Lett.* **25**(3/4), 241-255 (1994). LBNL-35498
- 632 (653) Dynamical LEED Analyses of the Pt(111)-p(2x2)-NO and the Ni(111)-c(4x2)-2NO Structures: Substrate Relaxation and Unexpected Hollow-Site Adsorption, N. Materer, A. Barbieri, D. Gardin, U. Starke, J.D. Batteas, M.A. Van Hove, and G.A. Somorjai. *Surf. Sci.* **303**, 319-332 (1994). LBNL-34389
- 633 (658) Benzene Coadsorbed with CO on Pd(111) and Rh(111): Detailed Molecular Distortions and Induced Substrate Relaxations, A. Barbieri, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **306**(3), 261-268 (1994). LBNL-34657
- 634 (678) *Introduction to Surface Chemistry and Catalysis*, G.A. Somorjai. John Wiley & Sons, Inc.: New York, 1994.
- 635 (660) Carbon Monoxide Oxidation over Three Different Oxidation States of Copper: Metallic, Copper (I) Oxide, and Copper (II) Oxide—A Surface Science and Kinetic Study, G.G. Jernigan and G.A. Somorjai, *J. Catal.* **147**, 567-577 (1994). LBNL-34785
- 636 (656) Coadsorbate Induced Compression of Sulfur Overlayers on Re(0001) and Pt(111) by CO, J.C. Dunphy, B.J. McIntyre, J. Gomez, D.F. Ogletree, M.B. Salmeron, and G.A. Somorjai, *J. Chem. Phys.* **100**(8), 6092-6097 (1994). LBNL-34213
- 637 (677) Ensemble Size Reduction by Rhenium-Sulfur as a Method to Lower the Rate of Deactivation of Hydrocarbon Reactions over Pt Catalysts, F.H. Ribeiro, A. Bonivardi, and G.A. Somorjai, *Catal. Lett.* **27**(1/2), 1 (1994). LBNL-35552

- 638 (665) Surface Crystallography of Re(0001)-(2x2)-S and Re(0001)-(2 $\sqrt{3}$ x 2 $\sqrt{3}$) R30°-6S: A Combined LEED and STM Study, A. Barbieri, D. Jentz, N. Materer, G. Held, J. Dunphy, D.F. Ogletree, P. Sautet, M. Salmeron, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **312**, 10-20 (1994). LBNL-34788
- 639 (651) Dynamical LEED Studies of Ethylidyne on Pt(111) and Rh(111): Comparison of Molecular Distortions and Substrate Relaxations, A. Barbieri, M.A. Van Hove, and G.A. Somorjai, *in The Structure of Surfaces IV, Proc. ICSOS-IV*. X.D. Xie, S.Y. Tong, and M.A. Van Hove, eds. World Scientific Publishing Co.: Singapore, 1994. p. 201-206. LBNL-34373
- 640 (682) Lewis Acidity as an Explanation for Oxide Promotion of Metals: Implications of Its Importance and Limits for Catalytic Reactions, A.B. Boffa, C. Lin, A.T. Bell, and G.A. Somorjai, *Catal. Lett.* **27**(3/4), 243-249 (1994). LBNL-35762
- 641 (661) Scanning Tunneling Microscopy Tip-Dependent Image Contrast of S/Pt(111) by Controlled Atom Transfer, B.J. McIntyre, P. Sautet, J.C. Dunphy, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci. Technol. B* **12**(3), 1751-1753 (1994). LBNL-34503
- 642 (667) A Tensor LEED Analysis of the Rh(110)-p2mg(2 x 1)-2CO Structure, J.D. Batteas, A. Barbieri, E.K. Starkey, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **313**, 341-348 (1994). LBNL-34902
- 643 (664) The Role of Readsorption during CO Hydrogenation over Cobalt Model Catalysts, J. Lahtinen and G.A. Somorjai, *J. Molec. Catal.* **91**(3), 387-397 (1994). LBNL-34802
- 644 (657) Reaction Layer Formation and Fracture at Chemically Vapor Deposited Diamond/Metal Interfaces, S.S. Perry and G.A. Somorjai, *J. Vac. Sci. Technol. A* **12**(4), 1513-1518 (1994). LBNL-34737
- 645 (688) Nanocatalysis by the Tip of a Scanning Tunneling Microscope Operating inside a Reactor Cell, B.J. McIntyre, M. Salmeron, and G.A. Somorjai, *Science* **265**, 1415-1418 (1994). LBNL-34787
- 646 (652) Low Energy Electrons (LEED, STM and HREELS) in the Microanalytical Characterization of Complex Surface Structures, W. Weiss, U. Starke, and G.A. Somorjai, *Analyt. Chim. Act.* **297**(1-2), 109 (1994). LBNL-34398
- 647 (671) The Fabrication of "High Technology" Catalysts, F.H. Ribeiro and G.A. Somorjai, *Recl. Trav. Chim. Pays-Bas* **113**, 419-422 (1994). LBNL-35212
- 648 (669) Transformation of Platinum into a Stable, High-Temperature, Dehydrogenation-Hydrogenation Catalyst by Ensemble Size Reduction with Rhenium and Sulfur, F.H. Ribeiro, A.L. Bonivardi, C. Kim, and G.A. Somorjai, *J. Catal.* **150**, 186-198 (1994). LBNL-35106
- 649 (666) Surface Structures in Ammonia Synthesis, N. Materer and G.A. Somorjai, *Topics in Catalysis* **1**(3/4), 215-231. LBNL-34828

- 650 (691) Promotion of CO and CO₂ Hydrogenation over Rh by Metal Oxides: The Influence of Oxide Lewis Acidity and Reducibility, A. Boffa, C. Lin, A.T. Bell, and G.A. Somorjai, *J. Catal.* **149**, 149-158 (1994). LBNL-34740
- 651 (673) Surface Reconstruction and Catalysis, G.A. Somorjai, *Ann. Rev. Phys. Chem.* **45**, 721-751 (1994). LBNL-35391
- 652 (659) Correlations of Atomic Structure and Reactivity at Solid-Gas and Solid-Liquid Interfaces, C.D. Stanners, D.E. Gardin, and G.A. Somorjai, *J. Electrochem. Soc.* **141**(11), 3278-3290 (1994). LBNL-34755
- 653 (655) Tensor LEED Analysis of the Ni(111)-p(2x2)-CH₃CN Structure, D.E. Gardin, A. Barbieri, J.D. Batteas, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **304**, 316-324 (1994). LBNL-34951
- 654 (668) Adsorbate-Induced Relaxations of Close-Packed FCC and HCP Metal Surfaces, U. Starke, M.A. Van Hove, and G.A. Somorjai, *Prog. Surf. Sci.* **46**(2/3), 305-319 (1994). LBNL-34568
- 655 (645) Heterogeneous Catalysis by Metals, F.H. Ribeiro and G.A. Somorjai, *in Encyclopedia of Inorganic Chemistry*. R.B. King, ed. John Wiley & Sons: Chichester; New York, 1994. pp. 1359-1371 LBNL-34064
- 656 (648) Surface Enhanced Raman Scattering, S.S. Perry and G.A. Somorjai, *in Encyclopedia of Inorganic Chemistry*. R.B. King, ed. John Wiley & Sons: Chichester; New York, 1994. pp. 4064-4088. LBNL-34221

1995

- 657 (676) Coadsorption of Water and Selected Aromatic Molecules To Model the Adhesion of Epoxy Resins on Hydrated Surfaces of Zinc Oxide and Iron Oxide, M. Nakazawa and G.A. Somorjai, *App. Surf. Sci.* **84**(3), 309-323 (1995). LBNL-35501
- 658 (683) Polar Ordering at the Liquid-Vapor Interface of *n*-Alcohols (C₁-C₈), C.D. Stanners, Q. Du, R.P. Chin, P. Cremer, Y.-R. Shen, and G.A. Somorjai, *Chem. Phys. Lett.* **232**, 407-413 (1995). LBNL-36115
- 659 (686) Reliability of Detailed LEED Structural Analyses: Pt(111) and Pt(111)-p(2x2)-O, N. Materer, U. Starke, A. Barbieri, R. Döll, K. Heinz, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **325**, 207-222 (1995). LBNL-36083
- 660 (687) The Conversion of Di-σ Bonded Ethylene to Ethylidyne on Pt(111) Monitored with Sum Frequency Generation: Evidence for an Ethylidene (or Ethyl) Intermediate, P. Cremer, C. Stanners, J.W. Niemantsverdriet, Y.R. Shen, and G.A. Somorjai, *Surf. Sci.* **328**, 111-118 (1995). LBNL-36145
- 661 (681) The Growth and Structure of Titanium Oxide Films on Pt(111) Investigated by LEED, XPS, ISS, and STM, A.B. Boffa, H.C. Galloway, P.W. Jacobs, J.J. Benítez, J.D. Batteas, M. Salmeron, A.T. Bell, and G.A. Somorjai, *Surf. Sci.* **326**, 80-92 (1995). LBNL-35763
- 662 (695) Preparation of a Model Ziegler-Natta Catalyst: Surface Science Studies of Magnesium Chloride Thin Film Deposited on Gold and Its Interaction with Titanium Chloride, E. Magni and G.A. Somorjai, *Appl. Surf. Sci.* **89**(2) 187-195 (1995). LBNL-36628
- 663 (698) Molecular Surface Structure of a Low-Temperature Ice Ih(0001) Crystal, N. Materer, U. Starke, A. Barbieri, M.A. Van Hove, G.-J. Kroes, C. Minot, and G.A. Somorjai, *J. Phys. Chem.* **99**, 6267-6269 (1995). LBNL-36899
- 664 (684) Adhesion at Diamond-Metal Interfaces: A Chemical Composition Perspective, S.S. Perry, S.P. McGinnis, and G.A. Somorjai, *J. Adhesion Sci. Technol.* **9**(6), 711-724 (1995). LBNL-36032
- 665 (694) The Interaction of Short-Chain Model Lubricants with the Surfaces of Hydrogenated Amorphous Carbon Films, S.S. Perry, C.M. Mate, R. White, and G.A. Somorjai, *Tribol. Lett.* **1**(1), 47-58 (1995). LBNL-36477
- 666 (693) Surface Structures of Sulfur and Carbon Overlayers on Mo(100): A Detailed Analysis by Automated Tensor LEED, D. Jentz, S. Rizzi, A. Barbieri, D. Kelly, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **329**(1-2), 14-31 (1995). LBNL-36382
- 667 (708) An ¹⁸O₂ Temperature-Programmed Isotope Exchange Study of Transition-Metal-Containing ZSM-5 Zeolites Used for Oxydehydrogenation of Ethane, Y.-F. Chang, H. Heinemann, and G.A. Somorjai, *J. Catal.* **154**(1), 24-32 (1995). LBNL-37446

- 668 (680) The Bonding Properties of Hydrogenated and Fluorinated Molecules to Zirconium Oxide Thin Films: Influence of Surface Defects and Water Coadsorption, K. Takeuchi, S.S. Perry, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **323**(1/2), 30-38 (1995). LBNL-35813
- 669 (662) An *In Situ* STM Determination of a Kinetic Pathway for the Coadsorbate-Induced Compression of Sulfur by CO on Pt(111), B.J. McIntyre, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **323**(3), 189-197 (1995). LBNL-34504
- 670 (703) Monitoring Surfaces on the Molecular Level during Catalytic Reactions at High Pressure by Sum Frequency Generation Vibrational Spectroscopy and Scanning Tunneling Microscopy, P.S. Cremer, B.J. McIntyre, M. Salmeron, Y.R. Shen, and G.A. Somorjai, *Catal. Lett.* **34**(1/2), 11-18 (1995). LBNL-37270
- 671 (690) Growth of Cu Films on Adsorbate-Covered Pt(111), C.D. Stanners, P.S. Cremer, D.E. Wilk, Y.R. Shen, and G.A. Somorjai, *Surf. Sci.* **334**, 95-104 (1995). LBNL-36313
- 672 (685) Molecular Level Studies of Solid-Gas and Solid-Liquid Interfaces, G.A. Somorjai, *Surf. Sci.* **335**(1-3), 10-22 (1995). LBNL-36082
- 673 (719) Restructuring of Metal Surfaces and Adsorbed Monolayers during Chemisorption and Catalytic Reaction, M.A. Van Hove and G.A. Somorjai, *Acta Cryst.* **B51**, 502-512 (1995). LBNL-35990
- 674 (678) Monolayer Surface Structures, J.D. Batteas and G.A. Somorjai, *in The Handbook of Surface Imaging and Visualization*. A.T. Hubbard, ed. CRC Press: Boca Raton, Florida., 1995. pp. 493-515. LBNL-35756
- 675 (679) Surface Catalysis on Metals, F.H. Ribeiro and G.A. Somorjai, *in The Handbook of Surface Imaging and Visualization*. A.T. Hubbard, ed. CRC Press: Boca Raton, Florida., 1995. pp. 767-783. LBNL-35757
- 676 (720) Spatially Controlled Oxidation by the Tip of a Scanning Tunneling Microscope Operating inside a Reactor, U. Schröder, B.J. McIntyre, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **331-333**, 337-342 (1995). LBNL-37956
- 677 (700) The Rh(110)-p2mg(2x1)-2O Surface Structure Determined by Automated Tensor LEED: Structure Changes with Oxygen Coverage, J.D. Batteas, A. Barbieri, E.K. Starkey, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **339**(1-2), 142-150 (1995). LBNL-36489
- 678 (701) Surface Science and Catalysis of Ethylene Hydrogenation, P.S. Cremer and G.A. Somorjai, *J. Chem. Soc. Far. Trans.* **91**(20), 3671-3677 (1995). LBNL-37167
- 679 (696) Preparation and Reaction Studies of Pt/Al₂O₃ Model Catalysts, C. Kim and G.A. Somorjai, *J. Kor. Vac. Soc.* **3**(4), 414-419 (1995). LBNL-36812

- 680 (715) Adhesion and Friction Properties of Hydrogenated Amorphous Carbon Films Measured by Atomic Force Microscopy, S.S. Perry, C.M. Mate, R.L. White, and G.A. Somorjai, *Tribol. Lett.* **1**, 233-246 (1995). LBNL-37634
- 681 (717) Ethylene and Propylene Polymerization Catalyzed by a Model Ziegler-Natta Catalyst Prepared by Gas Phase Deposition of Magnesium Chloride and Titanium Chloride Thin Films, E. Magni and G.A. Somorjai, *Catal. Lett.* **35**, 205-214 (1995). LBNL- 38227
- 682 (714) Progress in Our Understanding of Structure Bonding and Reactivity of Metal Surfaces and Adsorbed Monolayers on the Molecular Level: A 25 Year Perspective, G.A. Somorjai, Proceedings of Surface Canada '95 and the 25th Anniversary Special Symposium for Progress in Surface Science, *Prog. Surf. Sci.* **50**(1-4), 3-29 (1995). LBNL-38231
- 683 (706) Electron Irradiation Induced Reduction of Magnesium Chloride Thin Films Deposited on Gold: An XPS and ISS Study, E. Magni and G.A. Somorjai, *Surf. Sci.* **341**, L1078-L1084 (1995). LBNL-37404
- 684 (709) The Model System Approach to Heterogeneous Catalysis, F.H. Ribeiro and G.A. Somorjai, *Proceedings of the 8th Brazilian Seminar on Catalysis*, Rio de Janeiro, Brazil, 532-543 (1995). LBNL-38236

1996

- 685 (710) Bonding and Tribological Properties of Perfluorinated Lubricants and Hydrogenated Amorphous Carbon Films, S.S. Perry, C.M. Mate, R.L. White, and G.A. Somorjai, *IEEE Trans. and Magn.* **32**(1), 115-121 (1996). LBNL-37624
- 686 (692) Liquid Phase Hydrogenation of Cyclohexene over Platinum Foil Catalysts, D.E. Gardin, X. Su, P.S. Cremer, and G.A. Somorjai, *J. Catal.* **158**, 193-198 (1996). LBNL-36376
- 687 (704) Preparation of a Model Ziegler-Natta Catalyst: Electron Irradiation Induced Titanium Chloride Deposition on Magnesium Chloride Thin Films Grown on Gold, E. Magni and G.A. Somorjai, *Surf. Sci.* **345**(1-2), 1-16 (1996). LBNL-37322
- 688 (722) New Model Catalysts: Uniform Platinum Cluster Arrays Produced by Electron Beam Lithography, P.W. Jacobs, F.H. Ribeiro, S.J. Wind, and G.A. Somorjai, *Catal. Lett.* **37**, 131-136 (1996). LBNL-38006
- 689 (705) Molecular Modeling of Ethylidyne Adsorption and Diffusion on Pt(111), Z. Nomikou, M.A. Van Hove, and G.A. Somorjai, *Langmuir* **12**, 1251-1256 (1996). LBNL-37403
- 690 (711) Ethylene Hydrogenation on Pt(111) Monitored In Situ at High Pressures Using Sum Frequency Generation, P.S. Cremer, X. Su, Y.R. Shen, and G.A. Somorjai, *J. Am. Chem. Soc.* **118**, 2942-2949 (1996). LBNL-37625
- 691 (713) The Flexible Surface: New Techniques for Molecular Level Studies of Time Dependent Changes in Metal Surface Structure and Adsorbate Structure during Catalytic Reactions, G.A. Somorjai, Proceedings of the 8th International Symposium on Relations between Homogeneous and Heterogeneous Catalysis, *J. Mol. Catal. A* **107**, 39-53 (1996). LBNL-37783
- 692 (716) Turnover Rate Enhancement of Reforming Reactions on Polycrystalline Pt-Ir Foils, A.L. Bonivardi, F.H. Ribeiro, and G.A. Somorjai, *J. Catal.* **160**, 269-278 (1996). LBNL-37658
- 693 (727) Spatially (Nanometer) Controlled Hydrogenation and Oxidation of Carbonaceous Clusters by the Platinum Tip of a Scanning Tunneling Microscope Operating inside a Reactor, B.J. McIntyre, M. Salmeron, and G.A. Somorjai, *Catal. Lett.* **39**, 5-17 (1996). LBNL-38292
- 694 (718) Modern Surface Science and Surface Technologies: An Introduction, G.A. Somorjai, *Chem. Rev.* **96**, 1223-1235 (1996). LBNL-38237
- 695 (712) Coadsorbate Induced Reconstruction of a Stepped Pt(111) Surface by Sulfur and CO: A Novel Surface Restructuring Mechanism Observed by Scanning Tunneling Microscopy, J.D. Batteas, J.C. Dunphy, M. Salmeron, and G.A. Somorjai, *Phys. Rev. Lett.* **77**, 534-537 (1996). LBNL-37400
- 696 (724) The First Measurement of an Absolute Surface Concentration of Reaction Intermediates in Ethylene Hydrogenation, P.S. Cremer, X. Su, Y.R. Shen, and G.A. Somorjai, *Catal. Lett.* **40**, 143-145 (1996). LBNL-38238

- 697 (730) Electron Irradiation Induced Chemical Vapor Deposition of Titanium Chloride on Gold and on Magnesium Chloride Thin Films: Surface Characterization by AES, XPS, and TPD, E. Magni and G.A. Somorjai, *J. Phys. Chem.* **100**, 14786-14793 (1996). LBNL-38510
- 698 (734) Hydrogenation and Dehydrogenation of Propylene on Pt(111) Studied by Sum Frequency Generation from UHV to Atmospheric Pressure, P.S. Cremer, X. Su, Y.R. Shen, and G.A. Somorjai, *J. Phys. Chem.* **100**, 16302-16309 (1996). LBNL-39121
- 699 (725) Electron Spectroscopy Studies of the Surface Composition in the H₂SO₄/H₂O Binary System, D.H. Fairbrother, H. Johnston, and G.A. Somorjai, *J. Phys. Chem.* **100**, 13696-13700 (1996). LBNL-38239
- 700 (726) Formation and Morphology of Hydrocarbon Clusters on Pt(111) Produced by the Thermal Decomposition (Coking) of Propylene under High Pressures of H₂ and CO Observed *In Situ* by Scanning Tunneling Microscopy, B.J. McIntyre, M. Salmeron, and G.A. Somorjai, *J. Catal.* **164**, 184-193 (1996). LBNL-38230
- 701 (735) Pressure Dependence (10⁻¹⁰-700 Torr) of the Vibrational Spectra of Adsorbed CO on Pt(111) Studied by Sum Frequency Generation, X. Su, P.S. Cremer, Y.R. Shen, and G.A. Somorjai, *Phys. Rev. Lett.* **77**, 3858-3860 (1996). LBNL-39125
- 702 (733) The Hydrogenation and Dehydrogenation of Isobutene on Pt(111) Monitored by IR-Visible Sum Frequency Generation and Gas Chromatography, P.S. Cremer, X. Su, Y.R. Shen, and G.A. Somorjai, *J. Chem. Soc., Faraday Trans.* **92**, 4717-4722 (1996). LBNL-38987
- 703 (738) Surface Science at High Pressures, G.A. Somorjai, *Zeitschrift für Physikalische Chemie* **197**, 1-19 (1996). LBNL-39130

1997

- 704 (743) SFG and STM Studies of the Pt(111) Crystal Face at Atmospheric CO and Oxygen Pressures: Preparation of Platinum Nanocluster Arrays, X. Su, J. Jensen, M.X. Yang, M.B. Salmeron, and G.A. Somorjai, *Faraday Discussions* **105**, 263-274 (1996). LBNL-39272
- 705 (723) Nanometer Size Platinum Particle Arrays: Catalytic and Surface Chemical Properties, P.W. Jacobs, S.J. Wind, F.H. Ribeiro, and G.A. Somorjai, *Surf. Sci.* **372**, 249-253 (1997). LBNL-38066
- 706 (728) Structure of Disordered Ethylene Adsorbed on Pt(111) Analyzed by Diffuse LEED: Asymmetrical di- σ Bonding Favored, R. Döll, C.A. Gerken, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **374**, 151-161 (1997). LBNL-38315
- 707 (731) Reproducibility of Turnover Rates in Heterogeneous Metal Catalysis: Compilation of Data and Guidelines for Data Analysis, F.H. Ribeiro, A.E. Schach von Wittenau, C.H. Bartholomew, and G.A. Somorjai, *Catal. Rev.* **39**, 49-76 (1997). LBNL-39120
- 708 (732) Surface Science Approach to Modeling Supported Catalysts, P.L.J. Gunter, J.W. Niemantsverdriet, F.H. Ribeiro, and G.A. Somorjai, *Catal. Rev.-Sci. and Eng.* **39**, 77-168 (1997). LBNL-38986
- 709 (737) Scanning Tunneling Microscopy (STM) Study of Benzene and Its Coadsorption with Carbon Monoxide on Rh(111), H.A. Yoon, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **373**, 300-306 (1997). LBNL-38953
- 710 (739) New Directions of Catalysis Research, G.A. Somorjai, Proceedings of Francqui Award Symposium, *J. Molec. Catal. A*, **115**, 389-403 (1997). LBNL-39131
- 711 (740) Structure of Monolayer and Multilayer Magnesium Chloride Films Grown on Pd(111), D.H. Fairbrother, J.G. Roberts, S. Rizzi, and G.A. Somorjai, *Langmuir* **13**, 2090-2096 (1997). LBNL-39133
- 712 (742) Coverage-Dependent Structures of Sulfur on Pt(111) Studied by Low Energy Electron Diffraction (LEED) and Scanning Tunneling Microscopy (STM), H.A. Yoon, N. Materer, M. Salmeron, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.*, **376**, 254-266 (1997). LBNL-39236
- 713 (744) Surface Science Study of Model Ziegler-Natta Catalysts, E. Magni and G.A. Somorjai, *Surf. Sci.* **377**, 824-827 (1997). LBNL-39273
- 714 (747) Surface Chemistry on the Nanometer Scale, G.A. Somorjai, 40th Conference, Welch Foundation Proc. *57* (1997). LBNL-39670
- 715 (748) High-Pressure CO Oxidation on Pt(111) Monitored with Infrared-Visible Sum Frequency Generation (SFG), X. Su, P.S. Cremer, Y.R. Shen, and G.A. Somorjai, *J. Am. Chem. Soc.* **119**, 3994-4000 (1997). LBNL-39675

- 716 (729) Molecular Surface Structure of Ice(0001): Dynamical Low-Energy Electron Diffraction, Total-Energy Calculations and Molecular Dynamics Simulations, N. Materer, U. Starke, A. Barbieri, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **381**, 190-210 (1997). LBNL-38489
- 717 (754) Turnover Rate and Kinetic Mechanism for the Reaction of Hydrodechlorination of 1,1-dichlorotetrafluoroethane (CF₃-CFCl₂) over a Polycrystalline Pd Foil, F.H. Ribeiro, C.A. Gerken, and G.A. Somorjai, *Catal. Lett.* **45**, 149-153 (1997). LBNL-40063
- 718 (761) Hydrogenation of 1,3-Butadiene on Platinum Surfaces of Different Structures, C. Yoon, M.X. Yang, G.A. Somorjai, *Catal. Lett.* **46**, 37-41 (1997). LBNL-40655
- 719 (745) Temperature-Dependent Rearrangements and Reactions of Acetylene Adsorbed on Pt(111) Monitored in the Range of 125-381 K by Sum Frequency Generation, P.S. Cremer, X. Su, Y.R. Shen, and G.A. Somorjai, *J. Phys. Chem. B.* **101**, 6474-6478 (1997). LBNL-40067
- 720 Carbon Monoxide Oxidation over Three Different Oxidation States of Copper: Metallic Copper, Copper (I) Oxide, and Copper (II) Oxide—A Surface Science and Kinetic Study (Response), G. Jernigan and G.A. Somorjai, *J. Catal.* **165**, 284-284 (1997).
- 721 (753) Thermal Stability of Uniform Silver Clusters Prepared on Oxidized Silicon and Aluminum Surfaces by Electron Beam Lithography in Oxidizing and Reducing Ambients, M.X. Yang, P.W. Jacobs, C. Yoon, L. Muray, and G.A. Somorjai, *Catal. Lett.* **45**, 5-13 (1997). LBNL-40062
- 722 (759) Molecular Studies of the Mobility of Surface Metal Atoms and Adsorbates during Catalytic Reactions, G. Rupprechter and G.A. Somorjai, *in Dynamics of Surfaces and Reaction Kinetics in Heterogeneous Catalysis*, Studies in Surface Science and Catalysis Series, Vol. 109. G.F. Froment and K. Waugh, eds. Elsevier, 35, 1997. LBNL-40656
- 723 (777) Environment-Induced Surface Structural Changes of a Polymer: An In Situ IR+ Visible Sum Frequency Spectroscopic Study: Surface Structural Changes of a Polymer in Response to an Aqueous Environment, D. Zhang, R. S. Ward, Y. R. Shen, and G.A. Somorjai, *J. Phys. Chem.* **101**, 9060-9064; *Polym.Prepr.* **38**, 674-675 (1997). LBNL-40844
- 724 (750) New Model Catalysts (Platinum Nanoparticles) and New Techniques (SFG and STM) for Studies of Reaction Intermediates and Surface Restructuring at High Pressures during Catalytic Reactions, G.A. Somorjai, *Appl. Surf. Sci.* **121**, 1-19 (1997). LBNL-39677
- 725 (776) Model Catalysts Fabricated Using Electron Beam Lithography and Pulsed Laser Deposition, A. Eppler, G. Rupprechter, L. Gucci, and G. A. Somorjai, *J. Phys. Chem. B*, **101**, 9973-9997 (1997). LBNL-40735
- 726 (755) Structural Re-analysis of the Rh(111)+ $\sqrt{3} \times \sqrt{3}$ R30°-CO and Rh(111)+(2X2)-3CO Phases Using Automated Tensor LEED, M. Gierer, A. Barbieri, M.A. Van Hove, and G.A. Somorjai, *Appl. Surf. Sci.* **391**, 176-182 (1997). LBNL-39942

- 727 (770) Efficient Method for the Simulation of STM Images: II Application to Clean Rh(111) and Rh(111)+c(4x2)-2S, J. Cerda, A. Yoon, M.A. Van Hove, P. Sautet, M. Salmeron, and G.A. Somorjai, *Phys. Rev. B* **56**, 15900-15918 (1997). LBNL-40450
- 728 (746) XPS Study of Surface Composition of a Segmented Polyurethane Block Copolymer Modified by PDMS End Groups and Its Blends with Phenoxo, J. Wen, F. Lim, R. Ward, and G.A. Somorjai, *Macromolecules* **30**, 7206-7213 (1997). LBNL-39669
- 729 (767) Palladium-Catalyzed Hydrogenation without Hydrogen: The Hydrodechlorination of Chlorofluorocarbons with Solid State Hydrogen over the Palladium(111) Crystal Surface and Its Implications, G. Rupprechter and G.A. Somorjai, *Catal. Lett.* **48**, 17-20 (1997). LBNL-40615
- 730 (751) Studies of Surface Structures and Compositions of Polyethylene and Polypropylene by IR+ Visible Sum Frequency Vibrational Spectroscopy, D. Zhang, Y.R. Shen, and G.A. Somorjai, *Chem. Phys. Lett.* **281**, 394-400 (1997). LBNL-39755
- 731 (813) Electron Spectroscopy Studies of Acidified Water Surfaces, D.H. Fairbrother, H.S. Johnston, and G.A. Somorjai, *ACS Symp. Ser.* **656**, 106-114 (1997). LBNL-46653
- 732 (758) The Surface Chemistry of 1,3-Cyclohexadiene and 1,4-Cyclohexadiene on Pt(111) Studied by Surface Vibrational Spectroscopy with Sum Frequency Generation, X. Su, Y.R. Shen, and G.A. Somorjai, *Chem. Phys. Lett.* **280**, 302-307 (1997). LBNL-40066
- 733 (721) The Molecular Surface Science of Adhesion, G. A. Somorjai, *in* *Mittal Festschrift*, W. J. van Ooij and H. R. Anderson, Jr. (Eds.), VSP (1997), pp. 1-18. LBNL-37920

1998

- 734 (778) Surface-Induced Ferroelectric Ice on Pt(111), X. Su, L. Lianos, Y. R. Shen, and G. A. Somorjai, *Phys. Rev. Lett.* **80**, 1533-1536 (1998). LBNL-40906
- 735 (780) The Flexible Surface: Molecular Studies Explain the Extraordinary Diversity of Surface Chemical Properties, G. A. Somorjai and G. Rupprechter, *J. Chem. Educ.* **75**, 162-176 (1998). LBNL-40996
- 736 (773) High Pressure Adsorbate Structures Studied by STM: CO on Pt(111) in Equilibrium with the Gas Phase, J.A. Jensen, K.B. Rider, M. Salmeron, and G.A. Somorjai, *Phys. Rev. Lett.* **80**, 1228-1231 (1998). LBNL-40601
- 737 (752) Molecular Concepts of Heterogeneous Catalysis, G.A. Somorjai, *Theochem* **424**, 101-117 (1998). LBNL-40061
- 738 (769) An LEED and STM Study of the Structures Formed by Sulfur on the Rh(111) Surface, H.A. Yoon, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **395**, 268-279 (1998). LBNL-40135
- 739 (768) Lithographic Fabrication of Model Systems in Heterogeneous Catalysis and Surface Science Studies, M.X. Yang, D.H. Gracias, P.W. Jacobs, and G.A. Somorjai, *Langmuir* **14**, 1458-1464 (1998). LBNL-40616
- 740 (781) From Surface Materials to Surface Technologies, G.A. Somorjai, presented for Von Hippel Award at MRS Fall 97 meeting, *MRS Bull.* **23**, 11-29 (1998). LBNL-41353
- 741 (702) Single Crystal Surfaces, F.H. Ribeiro and G.A. Somorjai, in *Handbook of Heterogeneous Catalysis*, VCH Publishing Division I, Weinheim, Germany. G. Ertl, H. Knözinger, J. Weitkamp, eds. 1998.
- 742 (707) Promoters and Poisons in Catalysis, Z. Paál and G.A. Somorjai, in *Handbook of Heterogeneous Catalysis*, VCH Publishing Division I, Weinheim, Germany. G. Ertl, H. Knözinger, J. Weitkamp, eds. 1998.
- 743 (749) New Methods (SFG and STM) of Atomic Characterization of Surfaces at High Pressures and during Reactions, G.A. Somorjai, *Proc. Symp. on Advanced Surface Analytical Techniques, Kyoto, Japan* (1998). LBNL-39676
- 744 (756) Reactions of 1-Butene and cis-2-Butene on Platinum Surfaces: Structure Sensitivity of cis-2-Butene Isomerization, C. Yoon, M.X. Yang, and G.A. Somorjai, *J. Catal.* **176**, 35-41 (1998). LBNL-40064
- 745 (757) High Pressure Catalytic Processes Studied by Sum Frequency Surface Vibrational Spectroscopy, Y.R. Shen, P.S. Cremer, X. Su, and G.A. Somorjai, *J. Mol. Catal.* **131** (1, 2, 3) 225-241 (1998). LBNL-40065
- 746 (760) The Effects of Promoters in Carbon Monoxide Hydrogenation on Cobalt Foil Model Catalysts, J. Lahtinen and G.A. Somorjai, *J. Mol. Catal.* **130**, 255-260 (1998). LBNL-40654

- 747 (762) Conversion of Heterogeneous Catalysis from Art to Science: The Surface Science of Heterogeneous Catalysis, P. Jacobs and G.A. Somorjai, *J. Mol. Catal.* **131**, 5-18 (1998). LBNL-40667
- 748 (763) Continuum Force Microscopy Study of the Elastic Modulus, Hardness and Friction of Polyethylene and Polypropylene Surfaces, D. H. Gracias and G. A. Somorjai, *Macromolecules* **31**, 1269-1276 (1998). LBNL-40660
- 749 (764) The Growth of Magnesium Chloride Monolayer and Multilayer Structures On Different Transition Metal (Pt, Pd Rh) Single Crystals with Varied Orientations, D.H. Fairbrother, J.G. Roberts, and G.A. Somorjai, *Surf. Sci.* **399**, 109-122 (1998). LBNL-40661
- 750 (772) Surface Structure–Mechanical Property Relationship of Low Density Polyethylene: An IR+Visible Sum Frequency Generation Spectroscopy and Atomic Force Microscopy Study, D.H. Gracias, D. Zhang, Y.R. Shen, and G.A. Somorjai, *Trib. Lett.* **4**, 231 (1998). LBNL-40662
- 751 (787) Selected Molecular Surface Structures Determined by Modern Low-Energy Electron Diffraction, M.A. Van Hove and G.A. Somorjai, *J. Mol. Catal.* **131**, 243-257 (1998). LBNL-40517
- 752 (791) Structure Insensitivity and Effect of Sulfur in the Reaction of Hydrodechlorination of 1,1-Dichlorotetrafluoroethane (CF₃CFCl₂) over Pd Catalysts, F.H. Ribeiro, C.A. Gerkin, G. Rupprechter, C.S. Kellner, G.W. Coulston, L.E. Manzer, L. Abrams, and G.A. Somorjai, *J. Catal.* **176**, 352-357 (1998). LBNL-44078
- 753 (741) The Effect of Potassium and Tin on the Hydrogenation of Ethylene and Dehydrogenation of Cyclohexane over Pt(111), Y.K. Park, F.H. Ribeiro, and G.A. Somorjai, *J. Catal.* **178**, 66-75 (1998). LBNL-40931
- 754 (775) The Effect of Sn on the Reactions of n-Hexane and Cyclohexane over Polycrystalline Pt Foils, T. Fujikawa, F.H. Ribeiro, and G.A. Somorjai, *J. Catal.* **178**, 58-65 (1998). LBNL-40719
- 755 (799) Surface Science toward Single Site Heterogeneous Polypropylene Catalysis: The Structure and Mechanical Properties of Polypropylene Surfaces, E. Magni, F. Malizia, and G.A. Somorjai, Proceedings of “Polypropylene Past, Present and Future: The Challenge Continues,” Università degli Studi, Ferrara, Italy, October 19 and 20, 1998. LBNL-42541
- 756 (789) Surface Studies of Polymer Blends by Sum Frequency Vibrational Spectroscopy, Atomic Force Microscopy, and Contact Angle Goniometry, D. Zhang, D.H. Gracias, R. Ward, M. Gaukler, Y. Tian, Y.R. Shen, and G.A. Somorjai, *J. Phys. Chem.* **102**, 6225-6230 (1998). LBNL-41894
- 757 (786) The Structure of Para-Xylene and Meta-Xylene Adsorbed on Rh(111) Studied by Scanning Tunneling Microscopy, P.D. Cernota, H.A. Yoon, M. Salmeron, and G.A. Somorjai, *Surf. Sci.* **415**, 351-362 (1998). LBNL-41733

- 758 (784) Preparation and Surface Science Characterization of Model Ziegler-Natta Catalysts: Role of Undercoordinated Surface Magnesium Atoms in the Chemisorption of TiCl_4 on MgCl_2 Thin Films, E. Magni and G.A. Somorjai, *J. Phys. Chem.* **102**, 8788-8795 (1998). LBNL-41709
- 759 (796) Reanalysis of the $\text{Rh}(111)+(2 \times 2)-3\text{NO}$ Structure Using Automated Tensor LEED, I. Zasada, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci. Lett.* **418**, 89-93 (1998). LBNL-42253
- 760 (790) Cyclohexene Dehydrogenation and Hydrogenation on $\text{Pt}(111)$ Monitored by SFG Surface Vibrational Spectroscopy: Different Reaction Mechanisms at High Pressures and in Vacuum, X. Su, K. Kung, J. Lahtinen, R. Y. Shen, and G.A. Somorjai, *Catal. Lett.* **54**, 9-15 (1998). LBNL-41915
- 761 (766) High Pressure Catalytic Processes Studied by Infrared-Visible Sum Frequency Generation, P.S. Cremer, X. Su, Y.R. Shen, and G.A. Somorjai, *J. of Mol. Cat.* **131**, 225-241 (1998). LBNL-40657
- 762 (809) Quantitative LEED Analysis of the Surface Structure of a MgCl_2 Thin Film Grown on $\text{Pd}(111)$, J.G. Roberts, M. Gierer, D.H. Fairbrother, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **399**, 123-128 (1998). LBNL-40712
- 763 (810) Catalytic Combustion of Ethane over Palladium Foil in the 300-450 °C Range: Kinetics and Surface Composition Studies, C. Descorme, P.W. Jacobs, and G.A. Somorjai, *J. Catal.* **178**, 668-678 (1998). LBNL-41378
- 764 (811) A Dedication to Brian E. Bent, G.A. Somorjai, *Langmuir* **14**, 1283-1283 (1998).
- 765 (814) Heterogeneous Catalytic Studies under Reaction Conditions, B.G. Anderson, J.W. Niemantsverdriet, and G.A. Somorjai, *CATTECH* **2**, 42-46 (1998). LBNL-44079
- 766 (774) The Effects of Promoters in Carbon Monoxide Hydrogenation on Cobalt Foil Model Catalysis, J. Lahtinen and G.A. Somorjai, *J. Mol. Catal* **130**, 255-260 (1998). LBNL-40718
- 767 (783) A New Model Catalyst Studied by HREM and AFM: Platinum Nanoparticle Arrays on Silica Fabricated by Electron Beam Lithography, G. Rupprechter, A.S. Eppler, and G.A. Somorjai, *Electron Microscopy 1998*, H. A. Calderon Benavides and M. Jose Yacaman, eds. Institute of Physics Publishing: Bristol and Philadelphia, 1998, vol. II, p. 369. LBNL-41385
- 768 (821) The Effect of Potassium and Tin on the Hydrogenation of Ethylene and Dehydrogenation of Cyclohexane over $\text{Pt}(111)$, Y.-K. Park, F. Ribeiro, and G.A. Somorjai, *J. of Catalysis* **178**, 66 (1998). LBNL-39134
- 769 (794) Correlation of Structure and Mechanical Properties of Polyolefin Surfaces by IR+Visible Sum Frequency Vibrational Spectroscopy and Atomic Force Microscopy, D. H. Gracias, D. Zhang, Y. R. Shen and G. A. Somorjai, in *Fundamentals of Nanoindentation and Nanotribology*, N. R. Moody, W. Gerberich, N. Burnham and S. Baker, (eds.), Materials Research Society Symposium Proceedings, 522, (1998) 175-180.

1999

- 770 (801) Probing the Surface Structural Rearrangement of Hydrogels by Sum Frequency Generation Spectroscopy, Q. Chen, D. Zhang, G.A. Somorjai, and C. Bertozzi *J. Am. Chem. Soc.* **121**, 446-447 (1999). LBNL-42543
- 771 (803) Sum Frequency Generation (SFG) Surface Vibrational Spectroscopy Studies of Buried Interfaces: Catalytic Reaction Intermediates on Transition Metal Crystal Surfaces at High Reactant Pressures; Polymer Surface Structures at the Solid–Gas and Solid–Liquid Interfaces, Z. Chen, D.H. Gracias, and G.A. Somorjai, *Appl. Phys. B* **68**, 549-557 (1999). LBNL-42316
- 772 (792) Molecular Studies of Catalytic Reactions on Crystal Surfaces at High Pressures and High Temperatures by Infrared–Visible Sum Frequency Generation (SFG) Surface Vibrational Spectroscopy, G.A. Somorjai and G. Rupprechter, *J. Phys. Chem. B.* **103**, 1623-1638 (1999). LBNL-44080
- 773 (785) 1,3- and 1,4-Cyclohexadiene Reaction Intermediates in Cyclohexane Hydrogenation and Dehydrogenation on Pt(111) Crystal Surface: A Combined Reaction Kinetics and Surface Vibrational Spectroscopy Study Using Sum Frequency Generation, X. Su, Y.R. Shen, K.Y. Kung, J. Lahtinen, and G.A. Somorjai, *J. Mol. Catal. A* **141**, 9-19 (1999). LBNL-41729
- 774 (800) Surface Science Approach to the Preparation and Characterization of Model Ziegler-Natta Heterogeneous Polymerization Catalysts, T. Koranyi, E. Magni, and G.A. Somorjai, *Topics in Cat.* **7**, 179-185 (1999). LBNL-42542
- 775 (804) Surface Composition of Biopolymer Blends Biospan-SP/Phenoxy and Biospan-F/Phenoxy Observed with SFG, XPS, and Contact Angle Goniometry, Z. Chen, R. Ward, Y. Tian, A.S. Eppler, Y.R. Shen, and G.A. Somorjai, *J. Phys. Chem.* **103**, 2935-2942 (1999). LBNL-42544
- 776 (808) Molecular Surface Studies of Adsorption and Catalytic Reaction on Crystal (Pt, Rh) Surfaces under High Pressure Conditions (Atmospheres) using Sum Frequency Generation (SFG)–Surface Vibrational Spectroscopy and Scanning Tunneling Microscopy (STM) Study, G.A. Somorjai, X. Su, K. McCrea, and K. Rider, *Topics in Cat.* **8**, 23-24 (1999). LBNL-44077
- 777 (795) High Pressure, High Temperature Scanning Tunneling Microscopy, J.A. Jensen, K.B. Rider, Y. Chen, M. Salmeron, and G.A. Somorjai, *J. Vac. Sci.* **17**, 1080-1084 (1999). LBNL-42249
- 778 (806) Adsorbate (Substrate) Induced Restructuring of Active Transition Metal Sites of Heterogeneous and Enzyme Catalysts, Y. Borodko and G.A. Somorjai, *Cat. Lett.* **59**, 89-91 (1999). LBNL-42887
- 779 (802) A Study of the Glass Transition of Polypropylene Surfaces by Sum-Frequency Vibrational Spectroscopy and Scanning Force Microscopy, D.H. Gracias, D. Zhang, L. Lianos, W. Ibach, Y.R. Shen, and G.A. Somorjai, *J. Chem. Phys.* **245**, 277-284 (1999). LBNL-42406

- 780 (807) Tensor Low-Energy Electron Diffraction Analysis of the Surface Structure of NaCl(100) Thin Films Grown on Pd(100) and Pt(111), J.G. Roberts, S. Hoffer, M.A. Van Hove, and G.A. Somorjai, *Surf. Sci.* **437**, 75-85 (1999). LBNL-46654
- 781 (797) Catalytic Hydrogenation of Carbon Oxides—A Ten-Year Perspective, Y. Borodko and G.A. Somorjai, *Appl. Catal. A* **185**, 355-362 (1999). LBNL-42540
- 782 (818) In Situ Surface Science Studies of Catalytic Reactions, G.A. Somorjai, *CATTECH* **3**, 84-97 (1999). LBNL-44083
- 783 (830) Hydrodesulfurization of Tetrahydrothiophene over Evaporated Mo, Co, and Mo-Co Model Catalysts, T. Fujikawa, F. H. Ribeiro, and G.A. Somorjai, *Catal. Lett.* **63**, 21-26 (1999). LBNL-47667.
- 784 (817) Molecular Characterization of Polymer and Polymer Blend Surfaces. Combined Sum Frequency Generation (SFG)—Surface Vibrational Spectroscopy and Scanning Force Microscopy (SFM) Studies, D.H. Gracias, Z. Chen, Y.R. Shen, and G.A. Somorjai, *Acc. Chem. Res.* **32**, 930-940 (1999). LBNL-44082
- 785 (857) Theoretical study of the termination of the Fe₃O₄ (111) surface, J. Ahdjoudj, C. Martinsky, C. Minot, M.A. Van Hove, G. A. Somorjai, *Surf. Sci.* **443**, 133-153 (1999). LBNL- 46656
- 786 (820) Sum Frequency Generation of CO on (111) and Polycrystalline Platinum Electrode Surfaces: Evidence for SFG Invisible Surface CO, S. Baldelli, N. Markovic, P. Ross, Y. R. Shen, and G.A. Somorjai, *J. Phys. Chem. B* **103**, 8920-8925 (1999). LBNL-44084