

Publications & Presentations

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Refereed Journal Publications

Web of Science: **h-index of 68 for 178 articles with a total of 26500 citations**
(average of 148 citations/article; updated 12/16/2018)

2018:

178. Schwämmlein, J. N.; Rheinländer, P. J.; Chen, Y.; Freyer, K. T.; Gasteiger, H. A.; "Anode Aging During PEMFC Start-Up and Shut-Down: H₂-Air Fronts vs Voltage Cycles"; *J. Electrochem. Soc.*, **2018**, *165*, F1312-F1322.
177. Orfanidi, A.; Rheinländer, P. J.; Schulte, N.; Gasteiger, H. A.; "Ink Solvent Dependence of the Ionomer Distribution in the Catalyst Layer of a PEMFC"; *J. Electrochem. Soc.*, **2018**, *165*, F1254-F1263.
176. Morasch, R.; Landesfeind, J.; Suthar, B.; Gasteiger, H. A.; "Detection of Binder Gradients Using Impedance Spectroscopy and Their Influence on the Tortuosity of Li-Ion Battery Graphite Electrodes"; *J. Electrochem. Soc.*, **2018**, *165*, A3459-A3467.
175. Solchenbach, S.; Hong, G.; Freiberg, A. T. S.; Jung, R.; Gasteiger, H. A.; "Electrolyte and SEI Decomposition Reactions of Transition Metal Ions Investigated by On-Line Electrochemical Mass Spectrometry"; *J. Electrochem. Soc.*, **2018**, *165*, A3304-A3312.
174. Freiberg, A. T. S.; Roos, M. K.; Wandt, J.; de Vivie-Riedle, R.; Gasteiger, H. A.; "Singlet Oxygen Reactivity with Carbonate Solvents Used for Li-Ion Battery Electrolytes"; *J. Phys. Chem. A*, **2018**, *122*, 8828-8839.
173. Wandt, J.; Freiberg, A. T. S.; Ogrodnik, A.; Gasteiger, H. A.; "Singlet Oxygen Evolution from Layered Transition Metal Oxide Cathode Materials and its Implications for Lithium-Ion Batteries"; *Materials Today*, **2018**, *21*, 825-833.
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170. Solchenbach, S.; Metzger, M.; Egawa, M.; Beyer, H.; Gasteiger, H. A.; "Quantification of PF₅ and POF₃ from Side Reactions of LiPF₆ in Li-Ion Batteries"; *J. Electrochem. Soc.*, **2018**, *165*, A3022-A3028.
169. Wetjen, M.; Trunk, M.; Werner, L.; Gernhäuser, R.; Märkisch, B.; Révay Z.; Gilles, R.; Gasteiger, H. A.; "Quantifying the Distribution of Electrolyte Decomposition Products in Silicon-Graphite Electrodes by Neutron Depth Profiling"; *J. Electrochem. Soc.*, **2018**, *165*, A2340-A2348.
168. Milien, M. S.; Beyer, H.; Beichel, W.; Klose, P.; Gasteiger, H. A.; Lucht, B. L.; Krossing, I.; "Lithium Bis(2,2,2-Trifluoroethyl)Phosphate Li[O₂P(OCH₂CF₃)₂]: A High Voltage Additive for LNMO/Graphite Cells"; *J. Electrochem. Soc.*, **2018**, *165*, A2569-A2576.
167. Jung, R.; Strobl, P.; Maglia, F.; Stinner, C.; Gasteiger, H. A.; "Temperature Dependence of Oxygen Release from LiNi_{0.6}Mn_{0.2}Co_{0.2}O₂ (NMC622) Cathode Materials for Li-Ion Batteries"; *J. Electrochem. Soc.*, **2018**, *165*, A2869-A2879.

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163. Suthar, B.; Landesfeind, J.; Eldiven, A.; Gasteiger, H. A.; "Method to Determine the In-Plane Tortuosity of Porous Electrodes"; *J. Electrochem. Soc.*, **2018**, *165*, A2008-A2018.
162. Kleiner, K.; Strehle, B.; Baker, A. R.; Day, S. J.; Tang, C. C.; Buchberger, I.; Chesneau, F.-F.; Gasteiger, H. A.; Piana, M.; "Origin of High Capacity and Poor Cycling Stability of Li-Rich Layered Oxides: A Long-Duration *in situ* Synchrotron Powder Diffraction Study"; *Chem. Mater.*, **2018**, *30*, 3656-3667.
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159. Wandt, J.; Jakes, P.; Granwehr, J.; Eichel, R.-A.; Gasteiger, H. A.; "Quantitative and Time-Resolved Detection of Lithium Plating on Graphite Anodes in Lithium Ion Batteries"; *Materials Today*, **2018**, *21*, 231-240.
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157. Berger, A.; Freiberg, A. T. S.; Siebel, A.; Thomas, R.; Patel, M. U. M.; Tromp, M.; Gasteiger, H. A.; Gorlin, Y.; "The Importance of Chemical Reactions in the Charging Process of Lithium-Sulfur Batteries"; *J. Electrochem. Soc.*, **2018**, *165*, A1288-A1296.
156. Schwämmlein, J. N.; Stühmeier, B. M.; Wagenbauer, K.; Dietz, H.; Tileli, V.; Gasteiger, H. A.; El-Sayed, H. A.; "Origin of Superior HOR/HER Activity of Bimetallic Pt-Ru Catalysts in Alkaline Media Identified via Ru@Pt Core-Shell Nanoparticles"; *J. Electrochem. Soc.*, **2018**, *165*, H229-H239.
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143. Pritzl, D.; Solchenbach, S.; Wetjen, M.; Gasteiger, H. A.; "Analysis of Vinylene Carbonate (VC) as Additive in Graphite/LiNi_{0.5}Mn_{1.5}O₄ Cells"; *J. Electrochem. Soc.*, **2017**, *164*, A2625-A2635.
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137. Madkikar, P.; Mittermeier, T.; Gasteiger, H. A.; Piana, M.; "Synergistic Effect on the Activity of ZrO₂-Fe as PGM-Free ORR Catalysts for PEMFCs"; *J. Electrochem. Soc.*, **2017**, *164*, F831-F833.
136. Simon, C.; Hasché, F.; Gasteiger, H. A.; "Influence of the Gas Diffusion Layer Compression on the Oxygen Transport in PEM Fuel Cells at High Water Saturation Levels"; *J. Electrochem. Soc.*, **2017**, *164*, F591-F599.
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133. Jung, R.; Metzger, M.; Maglia, F.; Stinner, C.; Gasteiger, H. A.; "Oxygen Release and Its Effect on the Cycling Stability of LiNi_xMn_yCo_zO₂ (NMC) Cathode Materials for Li-Ion Batteries"; *J. Electrochem. Soc.*, **2017**, *164*, A1361-A1377.
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5. Gasteiger, H. A.; Marković, N. M.; Ross, P. N. (Jr.); "On the Differences in the Reaction Mechanism for CO and CO/H₂ Electrooxidation on PtRu and PtSn Alloy Electrodes"; in: *Proceedings of the Fourth Ulmer Elektrochemische Tage*; Garche, J. (Ed.); Zentrum für Sonnenenergie- und Wasserstoff-Forschung (Ulm, Germany): **1996**; *vol. 4*, p. 193-206.

4. Marković, N. M.; Lucas, C. A.; Gasteiger, H. A.; Ross, P. N. (Jr.); "The Effects of Bromide Adsorption on the Underpotential Deposition of Copper at the Pt(111)-Solution Interface"; in: *ACS Symposium Series 656: Solid-Liquid Electrochemical Interfaces*; Jerkiewicz, G.; Soriaga, M. P.; Uosaki, K.; Wieckowski, A. (Eds.); American Chemical Society (Washington, DC): **1996**, p. 87-105.
3. Ross, P. N. (Jr.); Gasteiger, H. A.; "Methanol Electrocatalysis by Pt Alloys and Adatom-Modified Pt"; in *Proceedings of the First International Symposium on New Materials for Fuel Cell Systems*; Savadogo, O.; Roberge, P. R.; Veziroglu, T. N. (Eds.); Polytechnique de Montre´al (Montre´al, Canada): **1995**, vol. 1, p 286-295.
2. Marković, N. M.; Gasteiger, H. A.; Ross, P. N. (Jr.); "Oxygen Reduction on Platinum Single Crystal Surfaces"; in: *Proceedings of the Symposium on Oxygen Electrochemistry*; Adzić, R.; Anson, F. C.; Kinoshita, K. (Eds.); The Electrochemical Society: **1995**, vol. 95-26, p. 13-26.
1. Gasteiger, H. A.; "Methanol Electro-Oxidation on Well-Characterized Pt-Ru Alloys - Temperature Effects"; in: *Interface*; The Electrochemical Society: **1994**, fall issue, p. 49-50.

Organization of Symposia

27. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, March **2019**.
26. Co-Organizer: *7th European Low-Temperature Fuel Cells/Electrolyzer & H₂ Processing Forum*: Lucerne, Switzerland, July **2019**.
25. Co-Organizer: *18th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Cancun, Mexico, Oct. **2018**.
24. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, Feb. **2018**.
23. Co-Organizer: *17th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: National Harbor, USA, Oct. **2017**.
22. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, March **2017**.
21. Co-Organizer: *16th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Hawaii, USA, Oct. **2016**.
20. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, March **2016**.
19. Lead-Organizer: *15th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Phoenix, USA, Oct. **2015**.
18. Lead-Organizer: *Symposium on Low-Temperature Fuel Cells, Electrolyzers, and Redox Flow Cells at the ECS Conference of Electrochemical Energy Conversion & Storage with SOFC-XIV*: Glasgow, Scotland, July **2015**.
17. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, March **2015**.
16. Lead-Organizer: *14th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Cancun, Mexico, Oct. **2014**.
15. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, March **2014**.
14. Lead-Organizer: *13th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: San Francisco, USA, Oct. **2013**.
13. Co-Organizer: *Munich Battery Discussions*: Munich, Germany, March **2013**.
12. Lead-Organizer: *12th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Honolulu, USA, Oct. **2012**.
11. Co-Organizer: *Electrochemistry 2012*: Munich, Germany, Sept. **2012**.
10. Lead-Organizer: *11th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Boston, USA, Oct. **2011**.
9. Lead-Organizer: *10th International Symposium on Polymer Electrolyte Fuel Cells of the Electrochemical Society*: Las Vegas, USA, Oct. **2010**.
8. Co-Organizer: *9th International Symposium on Proton Exchange Fuel Cells of the Electrochemical Society*: Vienna, Austria, Oct. **2009**.

7. Co-Organizer: *8th International Symposium on Proton Exchange Fuel Cells of the Electrochemical Society*: Honolulu, USA, Oct. **2008**.
6. Co-Organizer: *7th International Symposium on Proton Exchange Fuel Cells of the Electrochemical Society*: Washington, D.C., USA, Oct. **2007**.
5. Co-Organizer: *6th International Symposium on Proton Exchange Fuel Cells of the Electrochemical Society*: Cancun, Mexico, Oct. **2006**.
4. Co-Organizer: *Symposium on Durability and Reliability of Low-Temperature Fuel Cells and Fuel Cell Systems of the Electrochemical Society*: Los Angeles, CA, USA, Oct. **2005**.
3. Co-Organizer: *Symposium on Fuel Cells from Materials to Systems of the Electrochemical Society*: Quebec City, Canada, May **2005**.
2. Co-Organizer: *Symposium on Materials for Fuel Cells of the Material Research Society*: Boston, MA, USA, Dec. **2002**.
1. Co-Organizer: *Fuel Cells Gordon Research Conf.*: Bristol, RI, USA, July **2000**.

Invited Talks, Keynotes, and Plenaries

72. Invited Talk: "Technological, Economical, and Ecological Constraints of Sustainable Electromobility", at the *13th Symposium on Market Success via Cutting-Edge Research* organized by PwC Strategy& (organizer: C. Christ): Munich, Germany, November **2018**.
71. Invited Talk: "Hydrogen Oxidation/Evolution Kinetics in PEM Fuel Cells and Electrolyzers", at the *Fall Meeting of the International Electrochemical Society* (organizer: V. di Noto): Bologna, Italy, Sept. **2018**.
70. Plenary Talk: "R&D Challenges Towards a Sustainable Hydrogen Economy for Transportation Applications", *Jacobus van't Hoff Lecture* at TU Delft (organizer: A. Stankiewicz): Delft, Netherlands, June **2018**.
69. Invited Talk: "Durability Aspects of High-Energy Cathode Active Materials for Lithium Ion Batteries with Liquid Electrolytes" at the *Conference on Research by the German Ministry of Research and Education* (organizer: H. Zeisel): Munich, Germany, June **2018**.
68. Keynote: "NCM and HE-NCM Degradation Mechanisms Studied by On-Line Electrochemical Mass Spectrometry, Impedance, and Emission Spectroscopy" at the *International Meeting on Lithium Ion Batteries* (organizer: M. Inaba): Kyoto, USA, June **2018**.
67. Invited Talk: "Insights into Lithium Ion Battery Degradation Mechanisms via On-Line Electrochemical Mass Spectrometry" at the *Gordon Research Conference on Batteries* (organizers: N. Balke, D. Steingart): Ventura, USA, March **2018**.
66. Invited Talk: "Hydrogen – Oil of the Future" at the *German Technical Museum* within the speaker series "Science for Everyone" (organizer: M. Zachmeier): Munich, Germany, Feb. **2018**.
65. Invited Talk: "MEA & DM Characterization/Optimization for Low Pt Loadings and High Current Densities" at the *Topical Meeting on Electrocatalysis for Fuel Cells*, sponsored by the Advanced Fuel Cells Executive Committee of the Technology Collaboration Programme (TCP) of the International Energy Agency (organizer: D. Stolten): Berlin, Germany, November **2017**.
64. Invited Talk: "Measurement Methods to Quantify the Physico-Chemical Parameters Required for Lithium Ion Battery Performance Models" at the *232nd Meeting of the Electrochemical Society* (organizer: R. Kostecky): National Harbor, USA, October **2018**.
63. Invited Talk: "Electrochemical Hydrogen Oxidation/Evolution Kinetics – New Insights into an Old Field" at the *Swiss Chemical Society Fall Meeting* (organizer: S. Decurtins): Bern, Switzerland, August **2017**.
62. Invited Talk: "FCEVs Fueled by Renewable H₂ - Remaining Challenges" at the *6th European PEFC & Electrolyzer Forum* (organizers: I. Cerri and A. Heinzl): Lucerne, Switzerland, July **2017**.
61. Invited Talk: "MEA & DM Characterization/Optimization for Low Pt-Loadings and High Current Densities" at the *231st Meeting of the Electrochemical Society* (organizer: H. Xu): New Orleans, USA, May **2017**.
60. Plenary Talk: "Performance Limitations for Low-Pt MEAs & MEA Degradation Mechanisms" at the *24th Fuel Cell Symposium (FCDIC)* (organizer: K. Ota): Tokyo, Japan, May **2017**.

59. Invited Talk: "Gassing Reactions of HE-NCM and Ni-Rich NCMs" at the 253rd Meeting of the American Chemical Society (organizer: Y. Shao-Horn): San Francisco, USA, April **2017**.
58. Plenary Talk: "Performance and Durability Challenges for Automotive PEM Fuel Cells" at the 18th Netherlands' Catalysis and Chemistry Conference (NCCC) (organizer: S. Otto): Noordwijkerhout, Netherlands, March **2017**.
57. Plenary Talk: "Electromobility - Batteries or Fuel Cells?" at the 26th ATC 2017: Industrial Inorganic Chemistry at the DECHEMA-Haus (organizer: G. Sextl): Frankfurt, Germany, Feb. **2017**.
56. Invited Talk: "Materials Degradation Mechanisms in Lithium Ion Batteries via On-Line Electrochemical Mass Spectrometry" at the International Meeting on Lithium Ion Batteries (organizer: K. Amine): Chicago, USA, June **2016**.
55. Invited Talk: "Lithium Ion Battery Anodes and Electrolytes - Processes and Challenges" at the German Israeli Battery School (organizers: J. Janek and E. Peled): Munich, Germany, April **2016**.
54. Invited Talk: "Electrolyte Additive Decomposition and Anodic Stability of Conductive Carbons in Lithium-Ion Batteries Examined by On-Line Electrochemical Mass Spectrometry" at the Advanced Automotive Battery Conference (organizer: M. Winter): Mainz, Germany, January **2016**.
53. Keynote Talk: "Electrocatalysis and Electrochemistry Research Needs for Energy Conversion/Storage" at the Symposium for Physical Chemistry and Chemical Physics at the Fritz Haber Institute (organizers: H. Freund, M. Scheffler, R. Schlögl, and M. Wolf): Berlin, Germany, September **2015**.
52. Invited Talk: "Kinetics of the Hydrogen Oxidation in Alkaline and Acid Electrolytes" at the Electrocatalysis Symposium of the Spring Electrochemical Society Meeting (organizer: Dr. S. Minteer): Chicago, USA, June **2015**.
51. Invited Talk: "Capacity Controlling Reactions and Processes in Lithium Oxygen Batteries" at the Batterieforum Deutschland (organizer: M. Winter): Berlin, Germany, Jan. **2015**.
50. Invited Talk: "Electromobility - Battery or Fuel Cells?" at the German Israeli Battery School (organizers: J. Janek and E. Peled): Tel Aviv, Israel, Oct. **2014**.
49. Plenary Talk: "Electrocatalysis in Low-Temperature Fuel Cells"; at the International Conference on Electrochemical Energy Science and Technology (organizer: J. Zhang): Shanghai, China, Oct. **2014**.
48. Invited Talk: "Reversible and Irreversible Reactions in Li-O₂ Batteries" at the Ulm Electrochemical Talks (organizer: Dr. W. Tillmetz): Ulm, Germany, June **2014**.
47. Invited Talk: "H₂ Oxidation/Evolution Kinetics in Acid vs. Base" at the CIMTEC Meeting (organizer: A. Aricó): Montecatini, Italy, June **2014**.
46. Invited Talk: "Gassing Reactions in Lithium Ion Batteries"; at the German-Italian-Japanese Meeting of Electrochemists (organizers: B. Scrosati, J. Garche, and Z. Ogumi): Padova, Italy, June **2014**.
45. Invited Talk: "Reversible and Irreversible Reactions in Li-O₂ Batteries" at the Electromobility Symposium of the Paul Scherrer Institut (organizer: T. Schmidt): Villigen, Switzerland, May **2014**.
44. Plenary Talk: "Electrocatalyst Challenges for Low-Temperature Fuel Cells" at the DICP Symposium (XXXIII) on Fuel Cells (organizers: B. Yi and G. Sun): Dalian, China, June **2013**.
43. Plenary Talk: "Electrocatalyst Challenges for Low-Temperature Fuel Cells" at the 2012 CATSA (Catalysis Society of South Africa) Meeting (organizer: J. Pletcher): Langebaan, South Africa, Nov. **2012**.
42. Invited Talk: "Fuel Cells for Transportation Applications: Electrocatalyst Kinetic and Durability Limitations" at the Summer School on Reactivity of Nanoparticles for more Efficient and Sustainable Energy Conversion - II (organizer: I. Chorkendorff): Kobæk Strand, Denmark, Aug. **2012**.
41. Plenary Lecture: "Electrocatalyst Challenges for Low-Temperature Fuel Cells" at the International Symposium on Catalysis for Clean Energy and Sustainable Chemistry (organizers: J. Campos-Martin and S. Rojas): Alcobendas-Madrid, Spain, June **2012**.
40. Plenary Lecture: "Low-Temperature Fuel Cells – Accomplishments & Challenges" at the Grove Fuel Cell Meeting (organizer: D. Hart): Berlin, Germany, April **2012**.
39. Invited Talk: "Catalysis and Electrode Design for Li-Air Batteries" at the Symposium on Integrating Theory and Experiment for Discovering the Fundamental Chemistry of the Li-Air and Other Metal-Air Battery Systems at the 243rd American Chemical Society National Meeting (organizers: J. Nørskov, W. Shelton, and Y. Xu): San Diego, USA, March **2012**.
38. Invited Talk: "Electromobility: Challenges for Electrochemical Conversion & Storage" at the Electromobility Symposium of the Paul Scherrer Institut (organizers: G. Scherer and T. Schmidt): Villigen, Switzerland, May **2011**.

37. Invited Talk: "Lithium-Oxygen Battery Catalysis" at the *Metal-Air, Metal-Sulfur, and Metal-Water Batteries Symposium (B4)* of the *2011 Electrochemical Society Spring Meeting* (organizers: Y. Shao-Horn, N. Dudney, and H. Arai): Montreal, Canada, May **2011**.
36. Plenary Lecture: "Fuel Cells and Metal-Air Batteries for All-Electric Vehicles: Electrocatalysis and Performance Degradation Mechanisms" at the *44th Annual Meeting of the German Catalysis Society* (organizers: W. Leitner and E. Klemm): Weimar, Germany, March **2011**.
35. Keynote Lecture: "Electrocatalysis in Low-Temperature Fuel Cells" at the *Fundamentals and Development of Fuel Cells Conference* (organizers: C. Iojoiu, F. Maillard, and Y. Bultel): Grenoble, France, Jan. **2011**.
34. Invited Talk: "Catalysis and Electrode Design for Lithium-Air Batteries" at the *Italian-Japanese-German Workshop* (organizers: Z. Ogumi, B. Scroati, and J. Garche): Sendai, Japan, Oct. **2010**.
33. Invited Talk: "Electrochemical Energy Storage and Conversion for Electric Vehicle Applications" at *eCarTech* (organizer: P. Haider): Munich, Germany, Sept. **2010**.
32. Invited Talk: "Catalysis Studies and Electrode Design Considerations for Lithium-Air Batteries" at *Division of Inorganic Chemistry Symposium of the American Chemical Society Meeting* (organizers: B. Donovan-Merkert and M. Millar): Boston, USA, Aug. **2010**.
31. Invited Talk: "Catalysis Studies and Electrode Design for Lithium-Air Battery Cathodes" at the *12th Ulm Electrochemical Talks* (organizers: J. Garche and W. Tillmetz): Ulm, Germany, June **2010**.
30. Invited Talk: "Electrocatalysis and Catalyst Degradation in Proton Exchange Membrane Fuel Cells" at the *18th World Hydrogen Conference* (organizers: D. Stolten and L. Sjunnesson): Essen, Germany, May **2010**.
29. Invited Talk: "Catalyst Design Challenges for Commercially Viable Proton Exchange Membrane Fuel Cells" at the *Hydro-Eco Workshop* (organizer: B. Scrosati): Rome, Italy, Feb. **2010**.
28. Invited Talk: "Oxygen Reduction/Evolution on Model Oxide Electrocatalysts" at the *Workshop on Catalytic Materials by Design* at the *University of Notre Dame* (organizer: J. Greeley): South Bend, USA, Jan. **2010**.
27. Invited Talk: "Lithium-Air Battery Electrodes: Catalysis & Electrode Design" at the *2009 4th International Forum on Li-Ion Battery Technology & Industrial Development* (organizer: X. Qiu): Beijing, China, Oct. **2009**.
26. Invited Talk: "Potential of Anion-Exchange Membrane Fuel Cell and Electrolyzer Technology" at the *Fuel Cells Gordon Research Conference* (organizers: F. Büchi and J. Elter): Bryant College, Smithfield, RI, USA, July **2009**.
25. Keynote Lecture: "Materials Performance and Degradation in Low-Temperature Fuel Cells" at the *Italian Electrochemical Days – Electrochemistry for the Environment (GEI-ERA 2008)* (organizers: M. Panizza and C. Arbizzani): Genova, Italy, June **2008**.
24. Invited Talk: "Catalysis and Catalyst Degradation in Fuel Cell Technology" at the *11th Europolymer Conference* (organizers: S. Destri, J. Garche, and R. Po): Gargnano, Italy, June **2008**.
23. Invited Talk: "Innovation in Alkaline Fuel Cells and Electrolyzers" at the *Fuel Cell Expo*: Tokyo, Japan, Feb. **2008**.
22. Invited Talk: "Materials Performance/Degradation & Materials Development Needs for Low-Temperature Fuel Cells" at the *European Materials Forum's Materials Summit on Materials Research: Key to Meeting Energy Needs and Climate Change* (organizers: B. Loeffler and R. Martins): Lisbon, Portugal, Oct. **2007**.
21. Invited Talk: "Anion-Exchange Membrane Fuel Cells: Performance and Development Needs" at the *f-cell Symposium*: Stuttgart, Germany, Sept. **2007**.
20. Invited Talk: "Electrode Kinetics and Kinetically Limited Performance in PEMFCs and DMFCs with State-of-the-Art Catalysts" at the *NATO Advanced Study Institute on Mini-Micro Fuel Cells as Electric Energy Generators* (organizer: S. Kakac): Cesme-Izmir, Turkey, July **2007**.
19. Invited Talk: "Catalyst Degradation Mechanisms in Proton Exchange Membrane (PEMFC) and Direct Methanol (DMFC) Fuel Cells" at the *NATO Advanced Study Institute on Mini-Micro Fuel Cells as Electric Energy Generators* (organizer: S. Kakac): Cesme-Izmir, Turkey, July **2007**.
18. Invited Talk: "Relevance of Fundamental Catalysis Studies to Proton Exchange Membrane Fuel Cell Applications" at the *ACS Symposium on The Science of Electrocatalysis: From Extended Surfaces to Nanoscale Catalysts* (organizer: N. M. Marković): Chicago, USA, March **2007**.
17. Keynote Lecture: "Kinetics and Catalyst Degradation in Polymer Electrolyte Fuel Cells" at the *Workshop on Fuel Cell Catalysis: a Surface Science Approach* (organizers: A. Wieckowski, M. Koper, and J. Nørskov): Leiden University, Netherlands, Oct. **2006**.

16. Invited Talk: "Degradation Phenomena in Automotive Fuel Cells and Materials Development Challenges" at the 4th *International Fuel Cell Workshop* (organizer: M. Watanabe): Kofu, Yamanashi, Japan, Sept. **2005**.
15. Keynote Lecture: "Durability of Polymer Electrolyte Membrane Fuel Cell Materials" at the *Solid States Ionics Conference SSI-15* (organizers: E. Ivers-Tiffée, J. Maier, and S. Singhal): Baden-Baden, Germany, July **2005**.
14. Keynote Lecture: "Catalyst Development Roadmap for Automotive PEMFCs and Catalyst Degradation Mechanisms" at the *Symposium on Electrocatalysts for Fuel Cells* at the *North American Catalysis Society Meeting* (organizer: J. Van Zee): Philadelphia, PA, USA, May **2005**.
13. Award Lecture (2003 Klaus-Jürgen Vetter Prize): "Degradation Mechanisms of PEMFC Materials" at the *Annual Meeting of the Applied Electrochemistry Division of the German Chemical Society* (organizer: J. Besenhard): Graz, Austria, Sept. **2004**.
12. Invited Talk: "Materials Challenges for Automotive PEM Fuel Cells" at the *American Physical Society Symposium on Basic Research for the Hydrogen Economy* (organizer: G. Crabtree): Montreal, Canada, March **2004**.
11. Keynote Lecture: "Materials Challenges for Automotive PEM Fuel Cells" at the *First International Conference on Fuel Cell Development and Deployment*; (organizer: N. Sammes): Storrs, CT, USA, March **2004**.
10. Invited Talk: "Current Material Limitations and Materials Research Needs for Automotive Fuel Cell Applications" at the *Integrated Nanosystems Conference* (organizer: R. Manchanda): Palo Alto, CA, USA, Sept. **2003**.
9. Invited Talk: "PEMFC Material and Development Challenges - Catalysts" at the *Fuel Cells Gordon Research Conference* (organizers: M. F. Mathias and B. Pebley): Bristol, R.I., USA, July **2003**.
8. Invited Talk: "Current and Future Platinum Requirements for PEM Fuel Cells" at the *DoE Basic Energy Sciences Hydrogen Workshop* (organizers: T. Zawodzinski and F. J. DiSalvo): Washington, DC, USA, May **2003**.
7. Keynote Lecture: "PEMFC Pt-Alloy Cathode Catalysts: Characterization of Kinetic Gains and Long-Term Corrosion Issues" at the *ECS Symposium on Electrochemistry of Novel Electrode Materials* (organizers: G. M. Brisard and A. Lasia): Paris, France, April **2003**.
6. Invited Talk: "Fundamental Development Issues for Membrane Electrode Assemblies in PEMFCs" at the 8th *Ulm Electrochemical Talks* (organizer: J. Garche): Ulm, Germany, June **2002**.
5. Invited Talk: "Catalyst Development Needs for PEM Fuel Cells" at the *NSF Workshop on Engineering Fundamentals of Low-Temperature (PEM) Fuel Cells* (organizers: R. Savinell and J. Payer): Arlington, VA, USA, Nov. **2001**.
4. Invited Talk: "PEMFC and DMFC Relevant ORR Aspects: Thin-Film RRDE Method for Supported Catalysts" at the 3rd *International Symposium on New Materials for Electrochemical Systems* (organizer: O. Savadogo): Montréal, Canada, July **1999**.
3. Invited Talk: "Selective Oxidation of CO in H₂-Rich Gas: Mechanistic Aspects and Process Optimization" at the *Fuel Cells Gordon Research Conference* (organizers: S. Gottesfeld and M. Shelef): Plymouth, NH, USA, June **1999**.
2. Invited Talk: "Reformer and PROX Technology" at the 2nd *International Fuel Cell Workshop on PEFCs for Portable & Transportation Power Sources* (organizers: W. Watanabe, S. Gottesfeld, U. Stimming, K. Ota, and O. Haas): Kita-Kyushu, Japan, Sept. **1998**.
1. Invited Talk: "Kinetics of the Selective CO Oxidation in H₂-Rich Gas" at the 2nd *International Symposium on New Materials for Electrochemical Systems* (organizer: O. Savadogo): Montréal, Canada, July **1997**.

Department Seminars

41. "Advanced Lithium Based Batteries: Materials Challenges and Degradation Mechanisms" at the *Seminar Lithium Ion Batteries – Expertise for the Production of the Future* held by the *Institute for Industrial Management and Assembly Technologies* at the *Technical Univ. of Munich* (invited by: G. Reinhart): Munich, Germany, July **2018**.

40. "R&D Challenges for Battery and Fuel Cell Electric Vehicles" at BMW AG (invited by: P. Lamp): Munich, Germany, April **2018**.
39. "R&D Challenges Towards Renewable Hydrogen Based Transportation" at the *Mechanical Eng. Dept.* at the *Massachusetts Institute of Technology* (invited by: Y. Shao-Horn): Cambridge, USA, March **2018**.
38. "Fuel Cell Electric Vehicles Fueled by Renewable Hydrogen – Remaining Challenges" at Clariant (invited by: G. Mestl): Heufeld, Germany, Dec. **2017**.
37. "Irreversible Side Reactions in Li-Air and Lithium-Ion Batteries" at the *Université Pierre et Marie Curie* (invited by: J. M. Tarascon): Paris, France, Oct. **2017**.
36. "Degradation Mechanisms in (Post-)Lithium Ion Batteries" at the *Research Center Jülich* (invited by: R. Eichel): Jülich, Germany, Feb. **2017**.
35. "Degradation Mechanisms in (Post-)Lithium Ion Batteries" at the *Chemistry Department* at the *Ludwig-Maximilians University Munich* (invited by: T. Bein): Munich, Germany, Feb. **2017**.
34. "Degradation Mechanisms in (Post-)Lithium Ion Batteries" at the *Mechanical Engineering Dept.* at the *Massachusetts Institute of Technology* (invited by: Y. Shao-Horn): Cambridge, USA, Dec. **2016**.
33. "Electromobility - Batteries or Fuel Cells?" *Schuit Lecture* at the *Dept. of Chemical and Biomolecular Engineering* of the *University of Delaware*, (invited by: Y. Yan): Delaware, USA, June **2015**.
32. "Degradation Processes in Lithium Ion Batteries" at the *Helmholtz Institute Ulm* at the *Ulm University* (invited by: D. Kramer): Ulm, Germany, Feb. **2015**.
31. "Gassing Reactions in Lithium Ion Batteries" at the *Münster Electrochemical Energy Technology Center* at the *University of Münster* (invited by: M. Winter): Münster, Germany, Sept. **2014**.
30. "Gassing Reactions in Lithium Ion Batteries" at the *Mechanical Engineering Dept.* at the *Massachusetts Institute of Technology* (invited by: Y. Shao-Horn): Cambridge, USA, Dec. **2013**.
29. "Battery and Fuel Cell Research Challenges for Electric Vehicle Applications" at the *Chemistry Dept.* at the *University Giessen* (invited by: J. Janek): Giessen, Germany, Feb. **2013**.
28. "Battery and Fuel Cell Challenges for Electric Vehicle Applications" at the *Mechanical Engineering Dept.* at the *Massachusetts Institute of Technology* (invited by: Y. Shao-Horn): Cambridge, USA, Dec. **2012**.
27. "Degradation Mechanisms in PEM Fuel Cells" at the *Chemical Engineering Dept.* at the *University of Cape Town* (invited by: O. Conrad): Cape Town, South Africa, Nov. **2012**.
26. "Kinetics of the H₂ Electrooxidation and the Oxygen Reduction Reaction in Acidic and Alkaline Fuel Cells" at the *Fuel Cell Nanomaterials Center* at *Yamanashi University* (invited by: M. Watanabe): Yamanashi, Japan, Oct. **2010**.
25. "Hydrogen Oxidation and Oxygen Reduction Kinetics in Acidic and Alkaline Fuel Cells" at the Department of Physics at Danish Technical University (invited by: J. Rossmeisl): Lyngby, Denmark, Jan. **2010**.
24. "Catalysis Studies & Electrode Design for Li-Air Batteries" at the Department of Chemical Engineering at Case Western Reserve University (invited by: R. Savinell): Cleveland, OH, USA, Jan. **2010**.
23. "Materials Challenges for Commercially Viable Proton Exchange Membrane Fuel Cells" at the Department of Chemical Engineering at Worcester Polytechnic Institute (invited by: R. Datta): Worcester, MA, USA, Oct. **2009**.
22. "H₂-Based Renewable Energy Concepts: Catalysis & Engineering" at the *School of Engineering* at the *University of Connecticut* (invited by: M. Anwar): Storrs, CT, USA, May **2009**.
21. "Electrocatalysis in H₂-Based Renewable Energy Concepts: from Model to Industrial Catalysts" at the *Department of Mechanical Engineering* at the *University of Tennessee* (invited by: W. Hamel): Knoxville, TN, USA, April **2009**.
20. "Materials Performance/Degradation in Low-Temperature Fuel Cells" at the *Department of Chemistry* at the *University of Rome* (invited by: B. Scrosati): Rome, Italy, Nov. **2007**.
19. "Automotive Cost & Durability Requirements for Polymer Electrolyte Membrane Fuel Cell Materials" at the *Department of Chemical Engineering* at the *University of Houston* (invited by: P. Strasser): Houston, TX, USA, March **2007**.
18. "Automotive Cost & Durability Requirements for Polymer Electrolyte Membrane Fuel Cell Materials" at the *National Institute of Chemistry* of Slovenia (invited by: S. Hocevar): Ljubljana, Slovenia, June **2006**.
17. "Kinetics and Catalyst Degradation in Polymer Electrolyte Membrane Fuel Cells" at the *Chemical Engineering Department* of MIT (invited by: R. C. Armstrong): Boston, MA, USA, March **2006**.

16. "Materials Degradation Mechanisms in Polymer Electrolyte Membrane Fuel Cells" at the *Mechanical Engineering Department of MIT* (invited by: Y. Shao-Horn): Boston, MA, USA, Feb. **2006**.
15. "Materials Degradation Mechanisms in Polymer Electrolyte Membrane Fuel Cells" at the *Department of Chemical Engineering of the University of California at Berkeley* (invited by: P. Balsara): Berkeley, CA, USA, Feb. **2006**.
14. "Catalyst Development Roadmap for Automotive PEMFCs and Catalyst Degradation Mechanisms" at the *Paul Scherrer Institute* (invited by: A. Wokaun): Villigen, Switzerland, July **2005**.
13. "Catalyst Materials Degradation Mechanisms in Automotive PEMFCs" at the *Department of Physics and Atmospheric Science of Dalhousie University* (invited by: J. Dahn): Halifax, Canada, May **2005**.
12. "Catalyst Materials Challenges for Automotive PEM Fuel Cells" at the *Department of Chemical Engineering of the University of Madison* (invited by: M. Mavrikakis): Madison, WI, USA, Nov. **2004**.
11. "Fundamental Issues in PEMFC Development and Future Research Requirements" at the *Département de Chimie of the Université de Sherbrooke* (invited by: G. M. Brisard): Sherbrooke, Canada, May **2002**.
10. "Selective CO Oxidation: Kinetics and Reactor Design" at *Arthur D. Little Inc.* (invited by: J. Bentley): Cambridge, MA, USA, March **1998**.
9. "Catalytic Processes in Polymer Electrolyte Membrane Fuel Cell Systems" at the *Chemical Engineering Department of Columbia University* (invited by: N. Turro): New York, NY, USA, Jan. **1998**.
8. "Kinetics of the Selective CO Oxidation in H₂-Rich Gas on Supported Noble Metal Catalysts" at *International Fuel Cells* (invited by: T. Fuller): South Windsor, CT, USA, July **1997**.
7. "Study of Cu Underpotential Deposition on Pt(111) in the Presence of Halides Using the Rotating Ring Pt(111)-Disk Electrode Method" at the *Fritz-Haber-Institute* (invited by: K. Doblhofer): Berlin, Germany, April **1997**.
6. "Electro-oxidation of Methanol and CO/H₂ - A Comparison of the Systems Pt-Ru and Pt-Sn" at the *Hahn-Meitner Institute* (invited by: N. Alonso-Vante): Berlin, Germany, Feb. **1996**.
5. "Electrooxidation of Methanol and CO/H₂ - A Comparison of the Systems Pt-Ru and Pt-Sn" at the *Institute for Technical Thermodynamics, DLR* (invited by: M. Fischer): Stuttgart, Germany, Jan. **1996**.
4. "Comparison of the Underpotential Deposition Mechanisms Between Pt(111)/Cu/Cl and Cu(111)/Pb/Cl" at the *Institute for Physical and Theoretical Chemistry at Bonn University* (invited by: K. Wandelt): Bonn, Germany, Dec. **1994**.
3. "H₂ and CO Electrooxidation on Well-Characterized Pt-Alloys: Rotating Disk Electrode Studies Including Temperature Effects" at the *Institute for Energy Conversion/Engineering of the Research Center Jülich* (invited by: U. Stimming): Jülich, Germany, Dec. **1994**.
2. "Methanol Electrooxidation on Well-Characterized Pt-Ru Alloys" at the *Département de Géologie Chimique, Université Laval* (invited by: P. C. Roberge): Québec City, Canada, Oct. **1992**.
1. "Methanol Electrooxidation on Well-Characterized Pt-Ru Alloys" at the *Département de Chimie, Université de Sherbrooke* (invited by: P. Harvey): Sherbrooke, Canada, Oct. **1992**.