

Literaturverzeichnis

- [AAG98] AUBERTIN, F.; ABADA, L.; GONSER, U.: *Carbon and nitrogen in steel. Hyperfine Interactions*, 111 (1 - 4) 201–204 (1998)
- [ABD⁺04] ARCHIBALD, B.; BRÜMMER, O.; DEVENNEY, M.; ET AL.: *Combinatorial Methods in Catalysis*. In K. C. Nicolaou; R. Hanco; D. W. Hartwig (Hg.), *Handbook of Combinatorial Chemistry*. Wiley-VCH Verlag GmbH (2004)
- [ABS73] ALT, H.; BINDER, H.; SANDSTEDT, G.: *Mechanism of the electrocatalytic reduction of oxygen on metal chelates*. *Journal of Catalysis*, 28 (1) 8–19 (1973)
- [ADG⁺92] ALVES, M. C. M.; DODELET, J.-P.; GUAY, D.; ET AL.: *Origin of the electrocatalytic properties for oxygen reduction of some heat-treated polyacrylonitrile and phthalocyanine cobalt compounds adsorbed on carbon black as probed by electrochemistry and x-ray absorption spectroscopy*. 96 (26) 10 898–10 905 (1992)
- [AFS76] APPLEBY, A. J.; FLEISCH, J.; SAVY, M.: *Correlation between the spectroscopic properties of iron phthalocyanines and their activities for electrodic reduction of oxygen in alkaline media*. *Journal of Catalysis*, 44 (2) 281–292 (1976)
- [AJ04] APANEL, G.; JOHNSON, E.: *Direct methanol fuel cells - ready to go commercial?* *Fuel Cells Bulletin*, 2004 (11) 12–17 (2004)
- [AK65] ASSOUR, J. M.; KAHN, W. K.: *Electron Spin Resonance of α - and β -Cobalt Phthalocyanine*. *Journal of the American Chemical Society*, 87 (2) 207–212 (1965)
- [AML⁺04] ARIHARA, K.; MAO, L.; LIDDELL, P. A.; ET AL.: *Electrocatalytic Reduction of Oxygen in a Novel Catalytic System with Cobalt Phthalocyanines and Manganese Oxide*. *Journal of The Electrochemical Society*, 151 (12) A2047–A2052 (2004)
- [Ass65a] ASSOUR, J. M.: *Electron Spin Resonance of Tetraphenylporphine Chelates*. *The Journal of Chemical Physics*, 43 (7) 2477–2489 (1965)
- [Ass65b] ASSOUR, J. M.: *Solvent Effects on the Spin Resonance Spectra of Cobalt Phthalocyanine*. *Journal of the American Chemical Society*, 87 (21) 4701–4706 (1965)
- [AT96] ALVES, M. C. M.; TOURILLON, G.: *Influence of Complexation Processes on the Catalytic Properties of Some Polymer-Based Cobalt Compounds for Oxygen Electroreduction*. *Journal of Physical Chemistry*, 100 (18) 7566–7572 (1996)

- [Atk90] ATKINS, P. W.: *Physikalische Chemie*. VCH Verlagsgesellschaft mbH, Weinheim, 2. Aufl. (1990)
- [BAA03] BERKESSEL, A.; ASHKENAZI, E.; ANDREAE, M. R. M.: *Discovery of novel homogeneous rare earth catalysts by IR-thermography: epoxide opening with alcohols and Baeyer-Villiger oxidations with hydrogen peroxide*. Applied Catalysis A: General, 254 (1) 27–34 (2003)
- [Bar80] BARB, D.: *Grundlagen und Anwendungen der Mößbauerspektroskopie*. Akademie-Verlag, Berlin (1980)
- [BBF+01] BRON, M.; BOGDANOFF, P.; FIECHTER, S.; ET AL.: *Influence of selenium on the catalytic properties of ruthenium-based cluster catalysts for oxygen reduction*. Journal of Electroanalytical Chemistry, 500 (1-2) 510–517 (2001)
- [BCS77] BEHRET, H.; CLAUBERG, W.; SANDSTEDE, G.: *Zum Mechanismus der elektrokatalytischen Sauerstoffreduktion an Metallchelaten - I. Kobalt-Dibenzotetraazaannulen*. Berichte der Bunsen-Gesellschaft, 81 (1) 54–60 (1977)
- [BCS78] BEHRET, H.; CLAUBERG, W.; SANDSTEDE, G.: *Systematische Untersuchung an Elektrokatalysatoren der Sauerstoffreduktion*. Zeitschrift für Physikalische Chemie Neue Folge, 113 97 (1978)
- [BCS+94] BILOUL, A.; CONTAMIN, O.; SCARBECK, G.; ET AL.: *Oxygen reduction in acid media: influence of the activity of CoNPc(1,2) bilayer deposits in relation to their attachment to the carbon black support and role of surface groups as a function of heat treatment*. Journal of Electroanalytical Chemistry, 365 (1-2) 239–246 (1994)
- [Ber03] BERKESSEL, A.: *The discovery of catalytically active peptides through combinatorial chemistry*. Current Opinion in Chemical Biology, 7 (3) 409–419 (2003)
- [Bet93] BETHUNE, D. S.: *Cobalt-catalysed growth of carbon nanotubes with single-atomic-layer walls*. Nature, 363 605–607 (1993)
- [BFBT02] BRON, M.; FIECHTER, S.; BOGDANOFF, P.; ET AL.: *Thermogravimetry/Mass Spectrometry investigations on the formation of oxygen reduction catalysts for PEM fuel cells on the basis of heat treated iron phenanthroline complexes*. Fuel Cells, 2 (3-4) 137–142 (2002)
- [BFBT03] BRON, M.; FIECHTER, S.; BOGDANOFF, P.; ET AL.: *Characterisation of oxygen reduction catalysts prepared from carbon supported, heat treated iron phenanthroline complexes*. Fuel Cells, in press (2003)
- [BFHB02] BRON, M.; FIECHTER, S.; HILGENDORFF, M.; ET AL.: *Catalysts for oxygen reduction from heat-treated carbon-supported iron phenanthroline complexes*. Journal of Applied Electrochemistry, 32 (2) 211–216 (2002)
- [BHH+04] BOGDANOFF, P.; HERRMANN, I.; HILGENDORFF, M.; ET AL.: *Probing Structural Effects of Pyrolysed CoTMPP-based Electrocatalysts for Oxygen Reduction*

- via New Preparation Strategies*. Journal of New Materials for Electrochemical Systems, 7 (2) 85–92 (2004)
- [BLLW92] BLOMQUIST, J.; LÅNG, H.; LARSSON, R.; ET AL.: *Pyrolysis behaviour of metalloporphyrins. Part 2. – A mössbauer study of pyrolysed Fe^{III} tetraphenylporphyrin chloride*. Journal of the Chemical Society, Faraday Transactions, 88 (14) 2007–2011 (1992)
- [BRFE⁺02] BRON, M.; RADNIK, J.; FIEBER-ERDMANN, M.; ET AL.: *EXAFS, XPS and electrochemical studies on oxygen reduction catalysts obtained by heat treatment of iron phenanthroline complexes supported on high surface area carbon black*. Journal of Electroanalytical Chemistry, 535 113–119 (2002)
- [BS96] BAE, I. T.; SCHERSON, D. A.: *In Situ Core-Electron Spectroscopy of Carbon Monoxide Adsorbed on High-Area Platinum in an Acid Electrolyte*. Journal of Physical Chemistry, 100 (50) 19 215–19 217 (1996)
- [BS98] BAE, I. T.; SCHERSON, D. A.: *In Situ X-ray Absorption of a Carbon Monoxide-Iron Porphyrin Adduct Adsorbed on High-Area Carbon in an Aqueous Electrolyte*. Journal of Physical Chemistry B, 102 (14) 2519–2522 (1998)
- [BSB⁺94] BRUNSMAN, E. M.; SUTTON, R.; BORTZ, E.; ET AL.: *Magnetic properties of carbon-coated, ferromagnetic nanoparticles produced by a carbon-arc method*. In *38th Annual Conference on Magnetism and Magnetic Materials*, Bd. 75, 5882–5884. AIP, Minneapolis, Minnesota (USA) (1994)
- [BTR⁺78] BAGOTZKY, V. S.; TARASEVICH, M. R.; RADYUSHKINA, K. A.; ET AL.: *Electrocatalysis of the oxygen reduction process on metal chelates in acid electrolyte*. Journal of Power Sources, 2 (3) 233–240 (1978)
- [BTS98] BAE, I. T.; TRYK, D. A.; SCHERSON, D. A.: *Effect of Heat Treatment on the Redox Properties of Iron Porphyrins Adsorbed on High Area Carbon in Acid Electrolytes: An in Situ Fe K-Edge X-ray Absorption Near-Edge Structure Study*. Journal of Physical Chemistry B, 102 (21) 4114–4117 (1998)
- [Bun88] BUNKER, G.: *Systematic Errors in Fluorescence EXAFS*. Tutorial, Illinois Institute of Technology, <http://gbxafs.iit.edu/training/tutorials.html> (1988)
- [Bun89] BUNKER, G.: *Thickness Effects in EXAFS spectra*. Tutorial, Illinois Institute of Technology, <http://gbxafs.iit.edu/training/tutorials.html> (1989)
- [BVE⁺82] VAN BAAR, J. F.; VAN VEEN, J. A. R.; VAN DER EIJK, J. M.; ET AL.: *Electrochemical oxidation of carbon monoxide with carbon-supported group VIII metal chelates: mechanistic aspects*. Electrochimica Acta, 27 (9) 1315–1319 (1982)
- [BVK⁺91] BOUWENS, S. M. A. M.; VAN VEEN, J. A. R.; KONINGSBERGER, D. C.; ET AL.: *Extended X-ray Absorption Fine Structure Determination of the Structure of Cobalt in Carbon-Supported Co and Co-Mo Sulfide Hydrodesulfurization Catalysts*. Journal of Physical Chemistry, 95 (1) 123–134 (1991)

- [BVW82] VAN BAAR, J. F.; VAN VEEN, J. A. R.; DE WIT, N.: *Selective electro-oxidation of carbon monoxide with carbon-supported Rh- and Ir-porphyrins at low potentials in acid electrolyte*. *Electrochimica Acta*, 27 (1) 57–59 (1982)
- [BWPVV96] BOUWKAMP-WIJNOLTZ, A. L.; PALYS, B. J.; VISSCHER, W.; ET AL.: *An in-situ Raman study of the effect of the support for adsorbed iridium-chelates in catalysing oxygen reduction*. *Journal of Electroanalytical Chemistry*, 406 (1-2) 195–202 (1996)
- [BWVV94] BOUWKAMP-WIJNOLTZ, A. L.; VISSCHER, W.; VAN VEEN, J. A. R.: *Oxygen reduction catalysed by carbon supported iridium-chelates*. *Electrochimica Acta*, 39 (11-12) 1641–1645 (1994)
- [BWVV98] BOUWKAMP-WIJNOLTZ, A. L.; VISSCHER, W.; VAN VEEN, J. A. R.: *The selectivity of oxygen reduction by pyrolysed iron porphyrin supported on carbon*. *Electrochimica Acta*, 43 (21-22) 3141–3152 (1998)
- [BWVV+02] BOUWKAMP-WIJNOLTZ, A. L.; VISSCHER, W.; VAN VEEN, J. A. R.; ET AL.: *On Active-Site Heterogeneity in Pyrolyzed Carbon-Supported Iron Porphyrin Catalysts for the Electrochemical Reduction of Oxygen: An In Situ Mössbauer Study*. *Journal of Physical Chemistry B*, 106 (50) 12993–13001 (2002)
- [BWVVT99] BOUWKAMP-WIJNOLTZ, A. L.; VISSCHER, W.; VAN VEEN, J. A. R.; ET AL.: *Electrochemical reduction of oxygen: an alternative method to prepare active CoN₄ catalysts*. *Electrochimica Acta*, 45 (3) 379–386 (1999)
- [CALA98] CLAUDE, E.; ADDOU, T.; LATOUR, J.-M.; ET AL.: *A new method for electrochemical screening based on the rotating ring disc electrode and its application to oxygen reduction catalysts*. *Journal of Applied Electrochemistry*, 28 (1) 57–64 (1998)
- [Cas98] CASANOVA, A.: *A consortium approach to commercialized Westinghouse solid oxide fuel cell technology*. *Journal of Power Sources*, 71 (1-2) 65–70 (1998)
- [CDCSS99] CONTAMIN, O.; DEBIEMME-CHOUVY, C.; SAVY, M.; ET AL.: *Oxygen electroreduction catalysis: effect of sulfur addition on cobalt tetraazaannulene precursors*. *Electrochimica Acta*, 45 (4-5) 721–729 (1999)
- [CDSM01] CHEN, G.; DELAFUENTE, D. A.; SARANGAPANI, S.; ET AL.: *Combinatorial discovery of bifunctional oxygen reduction - water oxidation electrocatalysts for regenerative fuel cells*. *Catalysis Today*, 67 (4) 341–355 (2001)
- [CL98] CAMPBELL, C. J.; LAHERRÈRE, J. H.: *The End of Cheap Oil*. *Scientific American*, 78–83 (1998)
- [CLF+98] CÔTÉ, R.; LALANDE, G.; FAUBERT, G.; ET AL.: *Non-noble metal-based catalysts for the reduction of oxygen in polymer electrolyte fuel cells*. *Journal of New Materials for Electrochemical Systems*, 1 7–16 (1998)
- [CLG+98] CÔTÉ, R.; LALANDE, G.; GUAY, D.; ET AL.: *Influence of Nitrogen-Containing Precursors on the Electrocatalytic Activity of Heat-Treated Fe(OH)₂ on Carbon*

- Black for O₂ Reduction.* Journal of The Electrochemical Society, 145 (7) 2411–2418 (1998)
- [CLJ⁺05] CHAN, B. C.; LIU, R.; JAMBUNATHAN, K.; ET AL.: *Comparison of High-Throughput Electrochemical Methods for Testing Direct Methanol Fuel Cell Anode Electrocatalysts.* Journal of The Electrochemical Society, 152 (3) A594–A600 (2005)
- [CLK65] CONSTABARIS, G.; LINDQUIST, R. H.; KUNDIG, W.: *The Mössbauer Effect for Finely Divided Iron Oxide Porous η-Alumina, Silica, and Silica-Alumina.* Applied Physics Letters, 7 (3) 59–60 (1965)
- [CM03] CHINAROV, V.; MENZINGER, M.: *Reconstruction of noisy patterns by bistable gradient neural-like network.* Biosystems, 68 (2-3) 147–153 (2003)
- [CMD⁺79] COLLMAN, J. P.; MARROCCO, M.; DENISEVICH, P.; ET AL.: *Potent catalysis of the electroreduction of oxygen to water by dicobalt porphyrin dimers adsorbed on graphite electrodes.* Journal of Electroanalytical Chemistry, 101 (1) 117–122 (1979)
- [CMW00] CHALK, S. G.; MILLER, J. F.; WAGNER, F. W.: *Challenges for fuel cells in transport applications.* Journal of Power Sources, 86 (1-2) 40–51 (2000)
- [DBTJ⁺94] DIGNARD-BAILEY, L.; TRUDEAU, M. L.; JOLY, A.; ET AL.: *Graphitization and particle size analysis of pyrolyzed cobalt phthalocyanine/carbon catalysts for oxygen reduction in fuel cells.* Journal of Materials Research, 9 (12) 3203 (1994)
- [DJ87] DONG, S.; JIANG, R.: *Research on Chemically Modified Electrodes: Electro-catalytic Reduction of Dioxagen by Iron Tetraphenylporphyrin Modified Glassy Carbon Electrode with Heat Treatment.* Berichte der Bunsen-Gesellschaft - Physical Chemistry Chemical Physics, 91 479–484 (1987)
- [DKJ03] DZILINSKI, K.; KACZMARZYK, T.; JACKOWSKI, T.: *EPR and Mössbauer characterization of Fe(III) and Fe(I)-azaporphyrins and comparison to related iron porphyrins.* Molecular Physics Reports, 37 35–41 (2003)
- [Dol79] DOLPHIN, D. H. (Hg.): *The Porphyrins*, Bd. 4 von *Physical Chemistry*, B. Academic Press, Inc., New York, 1. Aufl. (1979)
- [DSTW76] DOLPHIN, D. H.; SAMS, J. R.; TSIN, T. B.; ET AL.: *Synthesis and Moessbauer spectra of octaethylporphyrin ferrous complexes.* Journal of the American Chemical Society, 98 (22) 6970–6975 (1976)
- [EPG⁺01] ERKO, A.; PACKE, I.; GUDAT, W.; ET AL.: *Graded crystal monochromator at Bessy II.* Proceedings of SPIE, 4145 122–128 (2001)
- [EPH⁺00] ERKO, A.; PACKE, I.; HELLWIG, C.; ET AL.: *KMC-2: the new x-ray beamline at BESSY II.* AIP Conference Proceedings, 521 (1) 415–418 (2000)

- [ERM⁺01] ENGLISCH, U.; ROSSNER, H.; MALETTA, H.; ET AL.: *The elliptical undulator UE46 and its monochromator beam-line for structural research on nanomagnets at BESSY-II*. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 467-468 (Part 1) 541–544 (2001)
- [ESM67] EPSTEIN, L. M.; STRAUB, D. K.; MARICONDI, C.: *Moessbauer spectra of some porphyrin complexes with pyridine, piperidine, and imidazole*. Inorganic Chemistry, 6 (9) 1720–1724 (1967)
- [Exa] *Reference X-ray Spectra of Metal Foils*. Techn. Ber., Exafs Materials, Danville
- [FCD⁺99] FAUBERT, G.; CÔTÉ, R.; DODELET, J.-P.; ET AL.: *Oxygen reduction catalysts for polymer electrolyte fuel cells from the pyrolysis of Fe^{II} acetate adsorbed on 3,4,9,10-perylenetetracarboxylic dianhydride*. Electrochimica Acta, 44 (15) 2589–2603 (1999)
- [FCG⁺98a] FAUBERT, G.; CÔTÉ, R.; GUAY, D.; ET AL.: *Activation and characterization of Fe-based catalysts for the reduction of oxygen in polymer electrolyte fuel cells*. Electrochimica Acta, 43 (14-15) 1969–1984 (1998)
- [FCG⁺98b] FAUBERT, G.; CÔTÉ, R.; GUAY, D.; ET AL.: *Iron catalysts prepared by high-temperature pyrolysis of tetraphenylporphyrins adsorbed on carbon black for oxygen reduction in polymer electrolyte fuel cells*. Electrochimica Acta, 43 (3-4) 341–353 (1998)
- [FGH99] FARLEY, N. R. S.; GURMAN, S. J.; HILLMAN, A. R.: *Simple cell for in situ X-ray absorption spectroelectrochemistry*. Electrochemistry Communications, 1 (10) 449–452 (1999)
- [FHR⁺92] FITZGERALD, J. P.; HAGGERTY, B. S.; RHEINGOLD, A. L.; ET AL.: *Iron octaethyltetraazaporphyrins: synthesis, characterization, coordination chemistry, and comparisons to related iron porphyrins and phthalocyanines*. Inorganic Chemistry, 31 (11) 2006–2013 (1992)
- [FKD73] FURHOP, J. H.; KADISH, K. M.; DAVIS, D. G.: *Redox behavior of metallo octaethylporphyrins*. Journal of the American Chemical Society, 95 (16) 5140–5147 (1973)
- [FLC⁺96] FAUBERT, G.; LALANDE, G.; CÔTÉ, R.; ET AL.: *Heat-treated iron and cobalt tetraphenylporphyrins adsorbed on carbon black: Physical characterization and catalytic properties of these materials for the reduction of oxygen in polymer electrolyte fuel cells*. Electrochimica Acta, 41 (10) 1689–1701 (1996)
- [FLC⁺97] FOURNIER, J.; LALANDE, G.; CÔTÉ, R.; ET AL.: *Activation of Various Fe-Based Precursors on Carbon Black and Graphite Supports to Obtain Catalysts for the Reduction of Oxygen in Fuel Cells*. Journal of The Electrochemical Society, 144 (1) 218–226 (1997)
- [Fuh75] FUHRHOP, J.-H.: *Reversible Reactions of Porphyrins and Metalloporphyrins and Electrochemistry*. In K. M. Smith (Hg.), *Porphyrins and Metalloporphyrins*. Elsevier Scientific Publishing Company, Amsterdam (1975)

- [FWI⁺81] FUHRMANN, A.; WIESENER, K.; ILIEV, I.; ET AL.: *A contribution to the characterization of heat-treated electrocatalytically active tetramethoxyphenylporphyrinato-cobalt-II*. Journal of Power Sources, 6 (1) 69–81 (1981)
- [GA02] GAMBURZEV, S.; APPLEBY, A. J.: *Recent progress in performance improvement of the proton exchange membrane fuel cell (PEMFC)*. Journal of Power Sources, 107 (1) 5–12 (2002)
- [Gal88] GALLA, H.-J.: *Spektroskopische Methoden in der Biochemie*. Georg Thieme Verlag, Stuttgart (1988)
- [GBC⁺95] GOUÉREC, P.; BILOU, A.; CONTAMIN, O.; ET AL.: *Dioxygen reduction electrocatalysis in acidic media: effect of peripheral ligand substitution on cobalt tetraphenylporphyrin*. Journal of Electroanalytical Chemistry, 398 (1-2) 67–75 (1995)
- [GBC⁺97] GOUÉREC, P.; BILOUL, A.; CONTAMIN, O.; ET AL.: *Oxygen reduction in acid media catalyzed by heat treated cobalt tetraazaannulene supported on an active charcoal: correlations between the performances after longevity tests and the active site configuration as seen by XPS and ToF-SIMS*. Journal of Electroanalytical Chemistry, 422 (1-2) 61–75 (1997)
- [GG71] GREENWOOD, N. N.; GIBB, T. C.: *Mössbauer Spectroscopy*. Chapman and Hall Ltd, London (1971)
- [GGS98] GOJKOVIC, S. L.; GUPTA, S.; SAVINELL, R. F.: *Heat-Treated Iron(III) Tetramethoxyphenyl Porphyrin Supported on High-Area Carbon as an Electrocatalyst for Oxygen Reduction: Part I. Characterization of the Electrocatalyst*. Journal of The Electrochemical Society, 145 (10) 3493–3499 (1998)
- [GGS99a] GOJKOVIC, S. L.; GUPTA, S.; SAVINELL, R. F.: *Heat-treated iron(III) tetramethoxyphenyl porphyrin chloride supported on high-area carbon as an electrocatalyst for oxygen reduction: Part II. Kinetics of oxygen reduction*. Journal of Electroanalytical Chemistry, 462 (1) 63–72 (1999)
- [GGS99b] GOJKOVIC, S. L.; GUPTA, S.; SAVINELL, R. F.: *Heat-treated iron(III) tetramethoxyphenyl porphyrin chloride supported on high-area carbon as an electrocatalyst for oxygen reduction: Part III. Detection of hydrogen-peroxide during oxygen reduction*. Electrochimica Acta, 45 (6) 889–897 (1999)
- [Gon75] GONSER, U. (Hg.): *Mössbauer spectroscopy*, Bd. 5 von *Topics in applied physics*. Springer-Verlag, Berlin (1975)
- [GRB⁺01] GÜNTER, M. M.; RESSLER, T.; BEMS, B.; ET AL.: *Implication of the microstructure of binary Cu/ZnO catalysts for their catalytic activity in methanol synthesis*. Catalysis Letters, 71 (1-2) 37–44 (2001)
- [GS99] GOUÉREC, P.; SAVY, M.: *Oxygen reduction electrocatalysis: ageing of pyrolyzed cobalt macrocycles dispersed on an active carbon*. Electrochimica Acta, 44 (15) 2653–2661 (1999)

- [GSR98] GOUÉREC, P.; SAVY, M.; RIGA, J.: *Oxygen reduction in acidic media catalyzed by pyrolyzed cobalt macrocycles dispersed on an active carbon: The importance of the content of oxygen surface groups on the evolution of the chelate structure during the heat treatment.* *Electrochimica Acta*, 43 (7) 743–753 (1998)
- [Güt75] GÜTLICH, P.: *Mössbauer Spectroscopy in Chemistry.* In U. Gonser (Hg.), *Mössbauer spectroscopy*, Bd. 5 von *Topics in applied physics*. Springer-Verlag, Berlin (1975)
- [GTB⁺89] GUPTA, S.; TRYK, D.; BAE, I. T.; ET AL.: *Heat-treated polyacrylonitrile-based catalysts for oxygen electroreduction.* *Journal of Applied Electrochemistry*, 19 (1) 19–27 (1989)
- [GTZ⁺98] GUPTA, S.; TRYK, D.; ZECEVIC, S. K.; ET AL.: *Methanol-tolerant electrocatalysts for oxygen reduction in a polymer electrolyte membrane fuel cell.* *Journal of Applied Electrochemistry*, 28 (7) 673–682 (1998)
- [GWG⁺83] GRUENIG, G.; WIESENER, K.; GAMBURZEV, S.; ET AL.: *Investigations of catalysts from the pyrolyzates of cobalt-containing and metal-free dibenzotetraazaannulenes on active carbon for oxygen electrodes in an acid medium.* *Journal of Electroanalytical Chemistry*, 159 (1) 155–162 (1983)
- [Haa90] HAASE, J.: *X-ray absorption fine structure of adsorbates: SEXAFS and NEXAFS.* In M. Campagna; R. Rosei (Hg.), *Proceedings of the International School of Physics 'Enrico Fermi' Course CVIII. Photoemission and Absorption Spectroscopy of Solids and Interfaces with Synchrotron Radiation.*, 277. Amsterdam (1990)
- [Ham67] HAMANN, K. H.: *Austauschstromdichten und Reaktionsmechanismen der Sauerstoffelektrode.* *Berichte der Bunsen-Gesellschaft*, 71 (6) 612–619 (1967)
- [HBA⁺98] HAFNER, J. H.; BRONIKOWSKI, M. J.; AZAMIAN, B. R.; ET AL.: *Catalytic growth of single-wall carbon nanotubes from metal particles.* *Chemical Physics Letters*, 296 (1-2) 195–202 (1998)
- [HCG67] HOARD, J. L.; COHEN, G. H.; GLICK, M. D.: *The Stereochemistry of the Coordination Group in an Iron(III) Derivative of Tetraphenylporphine.* *Journal of the American Chemical Society*, 89 (9) 1992–1996 (1967)
- [HDP⁺92] HERRON, M. E.; DOYLE, S. E.; PIZZINI, S.; ET AL.: *In situ studies of a dispersed platinum on carbon electrode using X-ray absorption spectroscopy.* *Journal of Electroanalytical Chemistry*, 324 (1-2) 243–258 (1992)
- [HDS⁺03] HILGENDORFF, M.; DORBANDT, I.; SCHULENBURG, H.; ET AL.: *Platinum-free chelate-catalyst material for the selective reduction of oxygen and method for production thereof* (2003)
- [Her02] HERRMANN, I.: *Entwicklung edelmetallfreier Katalysatoren für die elektrochemische Sauerstoffreduktion.* Diplomarbeit, Brandenburgische Technische Universität Cottbus (2002)

- [Her05] HERRMANN, I.: *unveröffentlichte Ergebnisse* (2005)
- [HHMS87] VAN DEN HAM, D.; HINNEN, C.; MAGNER, G.; ET AL.: *Electrocatalytic oxygen reduction: the role of oxygen bridges as a structural factor in the activity of transition-metal phthalocyanines*. *Journal of Physical Chemistry*, 91 (18) 4743–4748 (1987)
- [HKF⁺90] HORI, H.; KADONO, K.; FUKADA, K.; ET AL.: *Mössbauer Spectroscopic Studies of (Pheophytin)iron Complexes with Pyridine and Substituted Pyridines*. *Radiochimica Acta*, 49 (2) 77–82 (1990)
- [HLFD99] HE, P.; LEFÈVRE, M.; FAUBERT, G.; ET AL.: *Oxygen Reduction Catalysts for Polymer Electrolyte Fuel Cells from the Pyrolysis of Various Transition Metal Acetates Adsorbed on 3,4,9,10-Perylenetetracarboxylic Dianhydride*. *Journal of New Materials for Electrochemical Systems*, 2 243–251 (1999)
- [HSEK98] HIRSCHENHOFER, J. H.; STAUFFER, D. B.; ENGLEMAN, R. R.; ET AL.: *Fuel Cell Handbook*. 4. Aufl. (1998)
- [HSM98] HOLZWARTH, A.; SCHMIDT, H.-W.; MAIER, W. F.: *Detection of Catalytic Activity in Combinatorial Libraries of Heterogeneous Catalysts by IR Thermography*. *Angewandte Chemie International Edition*, 37 (19) 2644–2647 (1998)
- [HV98] HAMANN, C. H.; VIELSTICH, W.: *Elektrochemie*. Wiley-VCH Verlag GmbH, Weinheim, 3. Aufl. (1998)
- [HW76] HOLLEMAN, A.; WIBERG, E.: *Lehrbuch der Anorganischen Chemie*. Walter de Gruyter & Co., Berlin, 90. Aufl. (1976)
- [IFT86] IKEDA, O.; FUKUDA, H.; TAMURA, H.: *The effect of heat treatment on group VIII B porphyrins as electrocatalysts in the cathodic reduction of oxygen*. *Journal of the Chemical Society, Faraday Transactions 1*, 82 (5) 1561–1573 (1986)
- [IGK86] ILIEV, I.; GAMBURZEV, S.; KAISHEVA, A.: *Optimization of the pyrolysis temperature of active carbon-CoTMPP catalysts for air electrodes in alkaline media*. *Journal of Power Sources*, 17 (4) 345–352 (1986)
- [ISn68] ITO, A.; SUENAGA, M.; ÔNO, K.: *Mössbauer Study of Soluble Prussian Blue, Insoluble Prussian Blue, and Turnbull's Blue*. *The Journal of Chemical Physics*, 48 (8) 3597–3599 (1968)
- [Jas64] JASINSKI, R.: *A New Fuel Cell Cathode Catalyst*. *Nature*, 201 1212–1213 (1964)
- [Jas65] JASINSKI, R.: *Cobalt Phthalocyanine as a Fuel Cell Cathode*. *Journal of The Electrochemical Society*, 112 (5) 526–528 (1965)
- [JC02] JIANG, R.; CHU, D.: *A combinatorial approach toward electrochemical analysis*. *Journal of Electroanalytical Chemistry*, 527 (1-2) 137–142 (2002)

- [JD90] JIANG, R.; DONG, S.: *Rotating ring disk electrode (RRDE) theory dealing with nonstationary electrocatalysis: study of the electrocatalytic reduction of dioxygen at cobalt protoporphrin modified electrode*. Journal of Physical Chemistry, *94* (19) 7471–7476 (1990)
- [JSP⁺99] JANDELEIT, B.; SCHAEFER, D. J.; POWERS, T. S.; ET AL.: *Kombinatorische Materialforschung und Katalyse*. Angewandte Chemie, *111* (17) 2648–2689 (1999)
- [JSZ76] JAHNKE, H.; SCHÖNBORN, M.; ZIMMERMANN, G.: *Physical and Chemical Applications of Dyestuffs*. Topics in Current Chemistry, *61* 133–181 (1976)
- [JVS82] JOYNER, R. W.; VAN VEEN, J. A. R.; SACHTLER, W. M. H.: *Extended X-ray Absorption Fine Structure (EXAFS) Study of Cobalt-Porphyrin Catalysts Supported on Active Carbon*. Faraday Transactions, *78* 1021–1028 (1982)
- [KBCL66] KÜNDIG, W.; BÖMMEL, H.; CONSTABARIS, G.; ET AL.: *Some Properties of Supported Small α -Fe₂O₃ Particles Determined with the Mössbauer Effect*. Physical Review, *142* (2) 327–333 (1966)
- [KGI82] KAISHEVA, A.; GAMBURZEV, S.; ILIEV, I.: *Characteristics of Air (Oxygen) Gas-Diffusion Electrodes with Catalysts of Active Carbon and Pyrolyzed Compounds of the Tetramethoxyphenylporphyrin Type. Acidic and Neutral Electrolytes*. Soviet Electrochemistry, *18* (1) 127–131 (1982)
- [KH84] KORDESCH, M. E.; HOFFMAN, R. W.: *Electrochemical cells for in situ EXAFS*. Nuclear Instruments & Methods in Physics Research, Section A, *222* (1-2) 347–50 (1984)
- [KHF75] KRETSCHMER, K. J.; HAMANN, C. H.; FASSBENDER, B.: *Direct recording of current-rotational speed relationships at a rotating disc electrode*. Journal of Electroanalytical Chemistry, *60* (2) 231–234 (1975)
- [Klo80] KLOCKMANN, F.: *Lehrbuch der Mineralogie*. Ferdinand Enke Verlag, Stuttgart, 16. Aufl. (1980)
- [KP88] KONINGSBERGER, D. C.; PRINS, R.: *X-ray absorption: principles, applications, techniques of EXAFS, SEXAFS and XANES*. John Wiley & Sons, New York (1988)
- [KPG⁺01] KOKSHAROV, Y. A.; PANKRATOV, D. A.; GUBIN, S. P.; ET AL.: *Electron paramagnetic resonance of ferrite nanoparticles*. Journal of Applied Physics, *89* (4) 2293–2298 (2001)
- [KT74] KING, W. J.; TSEUNG, A. C. C.: *The reduction of oxygen on nickel-cobalt oxides - I: The influence of composition and preparation method on the activity of nickel-cobalt oxides*. Electrochimica Acta, *19* (8) 485–491 (1974)
- [KWV88] KIRSCHENMANN, M.; WÖHRLE, D.; VIELSTICH, W.: *Synthesis of 5,10,15,20-Tetrakisphenylporphins on a Carbon Support for the Cathodic Reduction of Oxygen in Fuel Cells*. Berichte der Bunsen-Gesellschaft für physikalische Chemie, *92* 1403–1406 (1988)

- [KXA96] KANG, C.; XIE, Y.; ANSON, F. C.: *Catalytic pathways for the electroreduction of O₂ at graphite electrodes on which a macrocyclic cobalt complex is adsorbed*. Journal of Electroanalytical Chemistry, 413 (1-2) 165–174 (1996)
- [KZB70] KOZAWA, A.; ZILIONIS, V. E.; BRODD, R. J.: *Oxygen and Hydrogen Peroxide Reduction at a Ferric Phthalocyanine-Catalyzed Graphite Electrode*. Journal of The Electrochemical Society, 117 (12) 1470–1474 (1970)
- [LACA85] LIU, H. Y.; ABDALMUHDI, I.; CHANG, C. K.; ET AL.: *Catalysis of the electroreduction of dioxygen and hydrogen peroxide by an anthracene-linked dimeric cobalt porphyrin*. Journal of Physical Chemistry, 89 (4) 665–670 (1985)
- [LCG+97] LALANDE, G.; CÔTÉ, R.; GUAY, D.; ET AL.: *Is nitrogen important in the formulation of Fe-based catalysts for oxygen reduction in solid polymer fuel cells?* Electrochimica Acta, 42 (9) 1379–1388 (1997)
- [LCT+95] LALANDE, G.; CÔTÉ, R.; TAMIZHMANI, G.; ET AL.: *Physical, chemical and electrochemical characterization of heat-treated tetracarboxylic cobalt phthalocyanine adsorbed on carbon black as electrocatalyst for oxygen reduction in polymer electrolyte fuel cells*. Electrochimica Acta, 40 (16) 2635–2646 (1995)
- [LD02] LEFÈVRE, M.; DODELET, J.-P.: *Molecular Oxygen Reduction in PEM Fuel Cells: Evidence for the Simultaneous Presence of Two Active Sites in Fe-Based Catalysts*. Journal of Physical Chemistry B, 106 (34) 8705–8713 (2002)
- [LD03] LEFÈVRE, M.; DODELET, J.-P.: *Fe-based catalysts for the reduction of oxygen in polymer electrolyte membrane fuel cell conditions: determination of the amount of peroxide released during electroreduction and its influence on the stability of the catalysts*. Electrochimica Acta, 48 (19) 2749–2760 (2003)
- [LDB00] LEFÈVRE, M.; DODELET, J.-P.; BERTRAND, P.: *O₂ Reduction in PEM Fuel Cells: Activity and Active Site Structural Information for Catalysts Obtained by the Pyrolysis at High Temperature of Fe Precursors*. Journal of Physical Chemistry B, 104 (47) 11 238–11 247 (2000)
- [LFC+96] LALANDE, G.; FAUBERT, G.; CÔTÉ, R.; ET AL.: *Catalytic activity and stability of heat-treated iron phthalocyanines for the electroreduction of oxygen in polymer electrolyte fuel cells*. Journal of Power Sources, 61 (1-2) 227–237 (1996)
- [LGD+97] LALANDE, G.; GUAY, D.; DODELET, J.-P.; ET AL.: *Electroreduction of Oxygen in Polymer Electrolyte Fuel Cells by Activated Carbon Coated Cobalt Nanocrystallites Produced by Electric Arc Discharge*. Chemistry of Materials, 9 (3) 784–790 (1997)
- [Lid03] LIDE, D. R. (Hg.): *CRC Handbook of Chemistry and Physics*. CRC Press, Boca Raton, 84. Aufl. (2003)
- [Lin79] LIN, W. C.: *Electron Spin Resonance and Electronic Structure of Metalloporphyrins*. In D. H. Dolphin (Hg.), *The Porphyrins, Physical Chemistry, B*, Bd. 4. Academic Press, Inc., New York, 1. Aufl. (1979)

- [LJ97] LEINEWEBER, A.; JACOBS, H.: *Structural investigations on ε -Fe₃N*. ISIS Experimental Report 9097A, Rutherford Appleton Laboratory (1997)
- [LLG⁺93] LADOUCEUR, M.; LALANDE, G.; GUAY, D.; ET AL.: *Pyrolyzed Cobalt Phthalocyanine as Electrocatalyst for Oxygen Reduction*. Journal of The Electrochemical Society, 140 (7) 1974 (1993)
- [LMW79] LA MAR, G. N.; WALKER, F. A.: *Nuclear Magnetic Resonance of Paramagnetic Metalloporphyrins*. In D. H. Dolphin (Hg.), *The Porphyrins, Physical Chemistry, B*, Bd. 4. Academic Press, Inc., New York, 1. Aufl. (1979)
- [LP75] LEE, P. A.; PENDRY, J. B.: *Theory of the extended x-ray absorption fine structure*. Physical Review B, 11 (8) 2795–2811 (1975)
- [LS02] LIU, R.; SMOTKIN, E. S.: *Array membrane electrode assemblies for high throughput screening of direct methanol fuel cell anode catalysts*. Journal of Electroanalytical Chemistry, 535 (1-2) 49–55 (2002)
- [LTC⁺95] LALANDE, G.; TAMIZHMANI, G.; CÔTÉ, R.; ET AL.: *Influence of Loading on the Activity and Stability of Heat-Treated Carbon-Supported Cobalt Phthalocyanine Electrocatalysts in Solid Polymer Electrolyte Fuel Cells*. Journal of The Electrochemical Society, 142 (4) 1162 (1995)
- [Möβ58a] MÖSSBAUER, R. L.: *Kernresonanzabsorption von Gammastrahlung in Ir¹⁹¹*. Die Naturwissenschaften, 45 (22) 538–539 (1958)
- [Möβ58b] MÖSSBAUER, R. L.: *Kernresonanzfluoreszenz von Gammastrahlung in Ir¹⁹¹*. Zeitschrift für Physik, 151 124–143 (1958)
- [Möβ59] MÖSSBAUER, R. L.: *Kernresonanzabsorption von γ -Strahlung in Ir¹⁹¹*. Zeitschrift für Naturforschung, 14a 211–216 (1959)
- [Mal55] MALMFORS, K. C.: *Resonant scattering of γ -rays*. In K. Siegbahn (Hg.), *Beta- and gamma-ray spectroscopy*, (XVIII) 521–530. North-Holland Publishing Company, Amsterdam (1955)
- [MAS00] MO, Y.; ANTONIO, M. R.; SCHERSON, D. A.: *In Situ Ru K-Edge X-Ray Absorption Fine Structure Studies of Electroprecipitated Ruthenium Dioxide Films with Relevance to Supercapacitor Applications*. Journal of Physical Chemistry B, 104 (42) 9777–9779 (2000)
- [MBCM68] MAER, K.; BEASLEY, J. M. L.; COLLINS, R. L.; ET AL.: *Structure of the titanium-iron cyanide complexes*. Journal of the American Chemical Society, 90 (12) 3201–3208 (1968)
- [Met59] METZGER, F. R.: *Resonance Fluorescence in Nuclei*. Progress in nuclear physics, 7 53–88 (1959)
- [ML03] MACLEAN, H. L.; LAVE, L. B.: *Evaluating automobile fuel/propulsion system technologies*. Progress in Energy and Combustion Science, 29 (1) 1–69 (2003)

- [MMR00] MANIGUET, S.; MATHEW, R. J.; RUSSELL, A. E.: *EXAFS of Carbon Monoxide Oxidation on Supported Pt Fuel Cell Electrocatalysts*. Journal of Physical Chemistry B, 104 (9) 1998–2004 (**2000**)
- [MNS⁺02] MALAKHOV, I. V.; NIKITENKO, S. G.; SAVINOVA, E. R.; ET AL.: *In Situ EXAFS Study To Probe Active Centers of Ru Chalcogenide Electrocatalysts During Oxygen Reduction Reaction*. Journal of Physical Chemistry B, 106 (7) 1670–1676 (**2002**)
- [Moo51] MOON, P. B.: *Resonant Nuclear Scattering of Gamma-Rays: Theory and Preliminary Experiments*. Proceedings of the Physical Society, 64 (1) 79–82 (**1951**)
- [Mos88] MOSS, G. P.: *Nomenclature of tetrapyrroles*. European Journal of Biochemistry, 178 (2) 277 (**1988**)
- [MS03] MALLOUK, T. E.; SMOTKIN, E. S.: *Combinatorial Catalyst Development Methods*. In W. Vielstich; A. Lamm; H. Gasteiger (Hg.), *Handbook of Fuel Cells - Fundamentals, Technology and Applications*, Bd. 2, 334–347. John Wiley & Sons Ltd, Chichester (**2003**)
- [MSE72] MARICONDI, C.; STRAUB, D. K.; EPSTEIN, L. M.: *Mössbauer Studies on Hemin Derivatives of $\alpha,\beta,\gamma,\delta$ -Tetraphenylporphine*. Journal of the American Chemical Society, 94 (12) 4157–4159 (**1972**)
- [MT03] MOCCHI, C.; TRASATTI, S.: *Composite electrocatalysts for molecular O₂ reduction in electrochemical power sources*. Journal of Molecular Catalysis A: Chemical, 204-205 713–720 (**2003**)
- [MTT⁺01] MOCCHI, C.; TAVARES, A. C.; TRASATTI, S.; ET AL.: *Advances in the Activation of Carbon Electrodes for Oxygen Reduction*. In E. W. Brooman; C. M. Doyle; C. Cominellis; J. Winnick (Hg.), *Energy and Electrochemical Processes for a Cleaner Environment*, Bd. 2001-23 von *Electrochemical Society Proceedings*, 362–370. The Electrochemical Society, Inc., Pennington, NJ, San Francisco, California, Fall 2001 (**2001**)
- [New98] NEWVILLE, M.: *FEFFIT - Using FEFF to model XAFS data*. Handbuch, University of Chicago (**1998**)
- [New01a] NEWVILLE, M.: *AUTOBK 2.93a*. Computerprogramm, <http://cars9.uchicago.edu/ifeffit/autobk.html>, Chicago (**2001**)
- [New01b] NEWVILLE, M.: *IFEFFIT: interactive XAFS analysis and FEFF fitting*. Journal of Synchrotron Radiation, 8 (2) 322–324 (**2001**)
- [New02] NEWVILLE, M.: *FEFFIT 2.98*. Computerprogramm, <http://cars9.uchicago.edu/ifeffit/feffit.html> (**2002**)
- [New04a] NEWVILLE, M.: *Fundamentals of XAFS*. University of Chicago (**2004**)
- [New04b] NEWVILLE, M.: *IFEFFIT - Interactive XAFS analysis and FEFF fitting 1.2.6*. Computerprogramm, <http://cars9.uchicago.edu/ifeffit/> (**2004**)

- [Nie93] NIEMANTSVERDRIET, J. W.: *Spectroscopy in Catalysis*. VCH Verlagsgesellschaft mbH, Weinheim (1993)
- [NLY⁺93] NEWVILLE, M.; LIVINS, P.; YACOBY, Y.; ET AL.: *Near-edge x-ray-absorption fine structure of Pb: A comparison of theory and experiment*. Physical Review B, 47 (21) 14 126–14 131 (1993)
- [NRH⁺95] NEWVILLE, M.; RAVEL, B.; HASKEL, D.; ET AL.: *Analysis of multiple-scattering XAFS data using theoretical standards*. Physica B: Condensed Matter, 208-209 (1-4) 154–156 (1995)
- [NSK00] NISHIGAMI, Y.; SANO, H.; KOJIMA, T.: *Estimation of forest area near deserts - production of global bio-methanol from solar energy*. Applied Energy, 67 (4) 383–393 (2000)
- [OGT⁺90] OHMS, D.; GUPTA, S.; TRYK, D. A.; ET AL.: *ESCA- und elektrochemische Untersuchungen an chelatmodifizierten Kohlematerialien für die kathodische Sauerstoffreduktion*. Zeitschrift für physikalische Chemie, Leipzig, 271 (3) 451–459 (1990)
- [OGY⁺99] OKADA, T.; GOTOU, S.; YOSHIDA, M.; ET AL.: *A Comparative Study of Organic Cobalt Complex Catalysts for Oxygen Reduction in Polymer Electrolyte Fuel Cells*. Journal of Inorganic and Organometallic Polymers, 9 (4) 199–219 (1999)
- [OGYS98] OKADA, T.; GOKITA, M.; YUASA, M.; ET AL.: *Oxygen Reduction Characteristics of Heat-Treated Catalysts Based on Cobalt-Porphyrin Ion Complexes*. Journal of The Electrochemical Society, 145 (3) 815–822 (1998)
- [OS96] OHYA, T.; SATO, M.: *Comparative study of Mössbauer spectra of iron(III) complexes of para-substituted tetraphenylporphyrins. Electronic effects of substituents and axial ligands*. Journal of the Chemical Society, Dalton Transactions, (8) 1519–1523 (1996)
- [OYH⁺00] OKADA, T.; YOSHIDA, M.; HIROSE, T.; ET AL.: *Oxygen reduction characteristics of graphite electrodes modified with cobalt di-quinolyldiamine derivatives*. Electrochimica Acta, 45 (27) 4419–4429 (2000)
- [PBA73] PEISACH, J.; BLUMBERG, W. E.; ADLER, A.: *Electron paramagnetic resonance studies of iron porphin and chlorin systems*. Annals of the New York Academy of Sciences, 206 310–327 (1973)
- [Put86] VAN DER PUTTEN, A.: Dissertation, Technical University of Eindhoven (1986)
- [Ran98] RANCOURT, D. G.: *Mössbauer spectroscopy in clay science*. Hyperfine Interactions, 117 (1-4) 3–38 (1998)
- [Rav03] RAVEL, B.: *ARTEMIS 0.6.009*. Washington (2001-2003)
- [Rav04a] RAVEL, B.: *Artemis 0.7.014*. Computerprogramm, <http://feff.phys.washington.edu/~ravel/software/exafs/>, Washington (2004)

- [Rav04b] RAVEL, B.: *Athena 0.8.037*. Computerprogramm, <http://feff.phys.washington.edu/~ravel/software/exafs/>, Washington (2004)
- [Rav04c] RAVEL, B.: *Atoms 3.0b9*. Computerprogramm, <http://feff.phys.washington.edu/~ravel/software/exafs/>, Washington (2004)
- [Rav04d] RAVEL, B.: *Using Artemis - Program manual*. <http://feff.phys.washington.edu/~ravel/software/exafs/> (2004)
- [RBW00] RETTICH, T. R.; BATTINO, R.; WILHELM, E.: *Solubility of gases in liquids. 22. High-precision determination of Henry's law constants of oxygen in liquid water from $T=274$ K to $T=328$ K*. The Journal of Chemical Thermodynamics, *32* (9) 1145–1156 (2000)
- [RCP99] ROVIRA, C.; CARLONI, P.; PARRINELLO, M.: *The Iron-Sulfur Bond in Cytochrome c*. Journal of Physical Chemistry B, *103* (33) 7031–7035 (1999)
- [Rec96] RECK, G.: *Powdercell*. Bundesanstalt für Materialforschung, Berlin (1996)
- [Ree01] REETZ, M. T.: *Kombinatorische und evolutionsgesteuerte Methoden zur Bildung enantioselektiver Katalysatoren*. Angewandte Chemie, *113* (2) 292–320 (2001)
- [Reh95] REHR, J. J.: *FEFF - Ab initio Multiple-Scattering X-ray Absorption Fine Structure and X-ray Absorption Near Edge Structure Code*. Program manual, feff v6.01, University of Washington (1995)
- [Reh02a] REHR, J. J.: *FEFF 6*. Computerprogramm, <http://leonardo.phys.washington.edu/feff/> (2002)
- [Reh02b] REHR, J. J.: *FEFF 8*. Computerprogramm, <http://leonardo.phys.washington.edu/feff/> (2002)
- [Rep99] *Report: 6th Grove Fuel Cell Symposium*. Fuel Cells Bulletin, *2* (13) 10–11 (1999)
- [RILC99] RODEMERCK, U.; IGNASZEWSKI, P.; LUCAS, M.; ET AL.: *Parallelisierte Synthese und schnelle katalytische Testung von Katalysatorbibliotheken für Oxidationsreaktionen*. Chemie Ingenieur Technik, *71* (8) 873 – 877 (1999)
- [RLT94] RADYUSHKINA, K. A.; LEVINA, O. A.; TARASEVICH, M. R.: *Electroreduction of Oxygen and Hydrogen Peroxide on Iron Tetra(*p*-methoxyphenyl)porphyrin Dispersed on Carbon Black*. Russian Journal of Electrochemistry, *30* (8) 895–899 (1994)
- [RN05] RAVEL, B.; NEWVILLE, M.: *ATHENA, ARTEMIS, HEPHAESTUS: data analysis for X-ray absorption spectroscopy using IFEFFIT*. Journal of Synchrotron Radiation, *12* 537–541 (2005)
- [Roe05] *Römpp Chemie-Lexikon Online*. Georg Thieme Verlag KG, Stuttgart (2005)

- [ROS⁺01] REGAN, T. J.; OHLDAG, H.; STAMM, C.; ET AL.: *Chemical effects at metal/oxide interfaces studied by x-ray-absorption spectroscopy*. Physical Review B, 64 (21) 214422 1–11 (2001)
- [Ros04] ROSSNER, H.: *private Mitteilung*. Hahn-Meitner-Institut Berlin (2004)
- [RSG⁺98] REDDINGTON, E.; SAPIENZA, A.; GURAU, B.; ET AL.: *Combinatorial Electrochemistry: A Highly Parallel, Optical Screening Method for Discovery of Better Electrocatalysts*. Science, 280 (5370) 1735–1737 (1998)
- [SBM01] SUN, Y.; BUCK, H.; MALLOUK, T. E.: *Combinatorial Discovery of Alloy Electrocatalysts for Amperometric Glucose Sensors*. Analytical Chemistry, 73 (7) 1599–1604 (2001)
- [SBS91] STÖHR, B.; BOEHM, H. P.; SCHLÖGL, R.: *Enhancement of the catalytic activity of activated carbons in oxidation reactions by thermal treatment with ammonia or hydrogen cyanide and observation of a superoxide species as a possible intermediate*. Carbon, 29 (6) 707–720 (1991)
- [Sch98] SCHLÖGL, R.: *Combinatorial Chemistry in Heterogeneous Catalysis: A New Scientific Approach or the King's New Clothes?* Angewandte Chemie International Edition, 37 (17) 2333–2336 (1998)
- [Sch02] SCHULENBURG, H.: *Ruthenium- und eisenbasierte Katalysatoren für die elektrochemische Sauerstoffreduktion in Polymerelektrolytmembran-Brennstoffzellen*. Dissertation, Freie Universität Berlin (2002)
- [Sch03] SCHLÖGL, R.: *Katalytische Ammoniaksynthese - eine unendliche Geschichte?* Angewandte Chemie, 115 (18) 2050–2055 (2003)
- [SDM03] SMOTKIN, E. S.; DÍAZ-MORALES, R. R.: *New Electrocatalysts By Combinatorial Methods*. Annual Review of Materials Research, 33 557–579 (2003)
- [SF89] SCHEIDT, W. R.; FINNEGAN, M. G.: *Structure of monoclinic chloro(meso-tetraphenylporphyrinato)iron(III)*. Acta Crystallographica C, 45 (8) 1214–1216 (1989)
- [SGF⁺83] SCHERSON, D. A.; GUPTA, S. L.; FIERRO, C.; ET AL.: *Cobalt tetramethoxyphenyl porphyrin - Emission Mössbauer spectroscopy and O₂ reduction electrochemical studies*. Electrochimica Acta, 28 (9) 1205–1209 (1983)
- [SH83] STERN, E. A.; HEALD, S. M.: *Principles and Applications of EXAFS*. In E.-E. Koch; T. Sasaki; H. Winick (Hg.), *Handbook on synchrotron radiation*, Bd. 1b, 995–1014. North-Holland, Amsterdam (1983)
- [SIMU90] SAWAGUCHI, T.; ITABASHI, T.; MATSUE, T.; ET AL.: *Electrochemical reduction of oxygen by metalloporphyrin ion-complexes with heat treatment*. Journal of Electroanalytical Chemistry, 279 (1-2) 219–230 (1990)
- [SK89] SMIRNOV, A. B.; KHLESKOV, V. I.: *Quantum chemical analysis of parameters of Mossbauer spectra of tetracoordinate Fe-porphyrin complexes in different spin states*. Theoretical and Experimental Chemistry, 25 (5) 551–555 (1989)

- [SL87] SCHEIDT, W. R.; LEE, Y. J.: *Recent Advances in the Stereochemistry of Metallotetrapyrroles*. In J. W. Buchler (Hg.), *Metal Complexes with Tetrapyrrole Ligands I*, Bd. 64 von *Structure and bonding*, 1–70. Springer-Verlag, Berlin (1987)
- [SMH05] SKRZYPEK, D.; MADEJSKA, I.; HABDAS, J.: *The electronic and magnetic properties of iron(III) derivatives of selected substituted meso-tetraphenyl porphyrins: ESR spectroscopic study*. *Journal of Physics and Chemistry of Solids*, 66 (1) 91–97 (2005)
- [SS78] STEVENS, J. G.; STEVENS, V. E. (Hg.): *Mössbauer effect data index*. covering the 1976 literature. New York (1978)
- [SSA93] STEIGER, B.; SHI, C.; ANSON, F. C.: *Electrocatalysis of the reduction of dioxygen by adsorbed cobalt 5,10,15,20-tetraarylporphyrins to which one, two, or three Ru(NH₃)₅²⁺ centers are coordinated*. *Inorganic Chemistry*, 32 (10) 2107–2113 (1993)
- [SSL71] SAYERS, D. E.; STERN, E. A.; LYTLE, F. W.: *New Technique for Investigating Noncrystalline Structures: Fourier Analysis of the Extended X-Ray-Absorption Fine Structure*. *Physical Review Letters*, 27 (18) 1204–1207 (1971)
- [SSS99] SINGH, J. P.; SINGH, N. K.; SINGH, R. N.: *Electrocatalytic activity of metal-substituted Fe₃O₄ obtained at low temperature for O₂ evolution*. *International Journal of Hydrogen Energy*, 24 (5) 433–439 (1999)
- [SSS+03] SCHULENBURG, H.; STANKOV, S.; SCHÜNEMANN, V.; ET AL.: *Catalysts for the Oxygen Reduction from Heat-Treated Iron(III) Tetramethoxyphenylporphyrin Chloride: Structure and Stability of Active Sites*. *Journal of Physical Chemistry B*, 107 (34) 9034–9041 (2003)
- [SSYA97] SHI, C.; STEIGER, B.; YUASA, M.; ET AL.: *Electroreduction of O₂ to H₂O at Unusually Positive Potentials Catalyzed by the Simplest of the Cobalt Porphyrins*. *Inorganic Chemistry*, 36 (20) 4294–4295 (1997)
- [ST79] SAMS, J. R.; TSIN, T. B.: *Mössbauer Spectroscopy of Iron Porphyrins*. In D. H. Dolphin (Hg.), *The Porphyrins, Physical Chemistry, B*, Bd. 4, 425–478. 1. Aufl. (1979)
- [Stö03] STÖHR, J.: *NEXAFS Spectroscopy*. Springer-Verlag, Berlin (2003)
- [Ste88] STERN, E. A.: *Theory of EXAFS*. In D. C. Koningsberger; R. Prins (Hg.), *X-ray absorption: principles, applications, techniques of EXAFS, SEXAFS and XANES*, Bd. 92 von *Chemical Analysis*, 3–51. John Wiley & Sons, New York (1988)
- [STG+86] SCHERSON, D. A.; TANAKA, A. A.; GUPTA, S. L.; ET AL.: *Transition metal macrocycles supported on high area carbon: Pyrolysis-mass spectrometry studies*. *Electrochimica Acta*, 31 (10) 1247–1258 (1986)

- [SUFW99] SULLIVAN, M. G.; UTOMO, H.; FAGAN, P. J.; ET AL.: *Automated Electrochemical Analysis with Combinatorial Electrode Arrays*. *Analytical Chemistry*, *71* (19) 4369–4375 (1999)
- [SW77] SHARMA, V. K.; WALDNER, F.: *Superparamagnetic and ferrimagnetic resonance of ultrafine Fe_3O_4 particles in ferrofluids*. *Journal of Applied Physics*, *48* (10) 4298–4302 (1977)
- [SWS98] SUN, G. Q.; WANG, J. T.; SAVINELL, R. F.: *Iron(III) tetramethoxyphenylporphyrin (FeTMPP) as methanol tolerant electrocatalyst for oxygen reduction in direct methanol fuel cells*. *Journal of Applied Electrochemistry*, *28* (10) 1087–1093 (1998)
- [SYO⁺94] SAITO, Y.; YOSHIKAWA, T.; OKUDA, M.; ET AL.: *Cobalt particles wrapped in graphitic carbon prepared by an arc discharge method*. *Journal of Applied Physics*, *75* (1) 134–137 (1994)
- [SYY⁺83] SCHERSON, D. A.; YAO, S. B. Y.; YEAGER, E. B.; ET AL.: *In situ and ex situ Moessbauer spectroscopy studies of iron phthalocyanine adsorbed on high surface area carbon*. *Journal of Physical Chemistry*, *87* (6) 932–943 (1983)
- [SZS01] SCHULTZ, T.; ZHOU, S.; SUNDMACHER, K.: *Current Status of and Recent Developments in the Direct Methanol Fuel Cell*. *Chemical Engineering & Technology*, *24* (12) 1223–1233 (2001)
- [TCH96] TRAPP, V.; CHRISTENSEN, P.; HAMNETT, A.: *New catalysts for oxygen reduction based on transition-metal sulfides*. *Faraday Transactions*, *92* (21) 4311–4319 (1996)
- [TD02] TONN, B.; DAS, S.: *An Assessment of Platinum Availability for Advanced Fuel Cells*. In *Proceedings of the Transportation Research Board Conference*. Washington, DC (2002)
- [TLF05] TSENG, P.; LEE, J.; FRILEY, P.: *A hydrogen economy: opportunities and challenges*. *Energy*, *30* (14) 2703–2720 (2005)
- [TRA77] TARASEVICH, M. R.; RADIYSCHKINA, K. A.; ANDROUSEVA, S. I.: *Electrocatalysis of oxygen reduction on organic metallic complexes*. *Bioelectrochemistry and Bioenergetics*, *4* (1) 18–29 (1977)
- [TRZ04] TARASEVICH, M. R.; RADIYUSHKINA, K. A.; ZHUTAIEVA, G. V.: *Electrocatalysis of the Oxygen Reaction by Pyropolymers of N_4 Complexes*. *Russian Journal of Electrochemistry*, *40* (11) 1174–1187 (2004)
- [TSE72a] TORRÉNS, M. A.; STRAUB, D. K.; EPSTEIN, L. M.: *Moessbauer studies on oxo-bridged iron(III) porphines*. *Journal of the American Chemical Society*, *94* (12) 4160–4162 (1972)
- [TSE72b] TORRÉNS, M. A.; STRAUB, D. K.; EPSTEIN, L. M.: *Mossbauer Studies on Hemin Derivatives of $\alpha,\beta,\gamma,\delta$ -Tetraarylporphines*. *Journal of the American Chemical Society*, *94* (12) 4162–4167 (1972)

- [VB82] VAN VEEN, J. A. R.; VAN BAAR, J. F.: *Electrocatalysis on Transitional Metal Chelates*. Reviews in inorganic chemistry, 4 293–327 (1982)
- [VBK⁺81a] VAN VEEN, J. A. R.; VAN BAAR, J. F.; KROESE, C. J.; ET AL.: *Oxygen Reduction on Transition-Metal Porphyrins in Acid Electrolyte - I. Activity*. Berichte der Bunsen-Gesellschaft für physikalische Chemie, 85 693–700 (1981)
- [VBK81b] VAN VEEN, J. A. R.; VAN BAAR, J. F.; KROESE, K. J.: *Effect of heat treatment on the performance of carbon-supported transition-metal chelates in the electrochemical reduction of oxygen*. Journal of the Chemical Society, Faraday Transactions 1, 77 (11) 2827–2843 (1981)
- [VC81] VAN VEEN, J. A. R.; COLIJN, H. A.: *Oxygen Reduction on Transition-Metal Porphyrins in Acid Electrolyte - II. Stability*. Berichte der Bunsen-Gesellschaft für physikalische Chemie, 85 700–704 (1981)
- [VCB88] VAN VEEN, J. A. R.; COLIJN, H. A.; VAN BAAR, J. F.: *On the effect of a heat treatment on the structure of carbon-supported metalloporphyrins and phthalocyanines*. Electrochimica Acta, 33 (6) 801–804 (1988)
- [VV79] VAN VEEN, J. A. R.; VISSER, C.: *Oxygen reduction on monomeric transition metal phthalocyanines in acid electrolyte*. Electrochimica Acta, 24 (9) 921–928 (1979)
- [Wal70] WALKER, F. A.: *An Electron Spin Resonance Study of Coordination to the fifth and sixth Positions of $\alpha,\beta,\gamma,\delta$ -tetra(*p*-methoxyphenyl)porphinatocobalt(II)*. Journal of the American Chemical Society, 92 (14) 4235–4244 (1970)
- [Wal74] WALKER, F. A.: *ESR Studies of Co(II) Tetraphenylporphyrins and Their Oxygen Adducts: Complex Formation with Aromatic Molecules and Sterically Hindered Lewis Bases*. Journal of Magnetic Resonance, 15 201–218 (1974)
- [Wal99] WALKER, F. A.: *Magnetic spectroscopic (EPR, ESEEM, Mossbauer, MCD and NMR) studies of low-spin ferriheme centers and their corresponding heme proteins*. Coordination Chemistry Reviews, 185-186 471–534 (1999)
- [Wal01] WALLRABE, A.: *Nachtsichttechnik*. Infrarot-Sensorik: physikalische Grundlagen, Aufbau, Konstruktion und Anwendung von Wärmebildgeräten. Friedr. Vieweg & Sohn Verlagsgesellschaft mbH, Braunschweig / Wiesbaden, 1. Aufl. (2001)
- [WBL⁺95] WENG, L. T.; BERTRAND, P.; LALANDE, G.; ET AL.: *Surface characterization by time-of-flight SIMS of a catalyst for oxygen electroreduction: pyrolyzed cobalt phthalocyanine-on-carbon black*. Applied Surface Science, 84 (1) 9–21 (1995)
- [WCF⁺99] WANG, H.; CÔTÉ, R.; FAUBERT, G.; ET AL.: *Effect of the Pre-Treatment of Carbon Black Supports on the Activity of Fe-Based Electrocatalysts for the Reduction of Oxygen*. Journal of Physical Chemistry B, 103 (12) 2042–2049 (1999)
- [Wer64] WERTHEIM, G. K.: *Mössbauer Effect: Principles and Applications*. Academic Press Inc. (1964)

- [WF80] WIESENER, K.; FUHRMANN, A.: *Die Verwendung von Tetramethoxyphenylporphyrinato-Cobalt-II und seiner Pyrolyseprodukte als Katalysatoren für die katodische Sauerstoffreduktion in sauren Brennstoffzellen.* Zeitschrift für physikalische Chemie, Leipzig, 261 (3) 411–424 (1980)
- [Wid93] WIDELÖV, A.: *Pyrolysis of iron and cobalt porphyrins sublimated onto the surface of carbon black as a method to prepare catalysts for O₂ reduction.* Electrochimica Acta, 38 (17) 2493–2502 (1993)
- [Wie86] WIESENER, K.: *N₄-chelates as electrocatalyst for cathodic oxygen reduction.* Electrochimica Acta, 31 (8) 1073–1078 (1986)
- [WL92] WIDELÖV, A.; LARSSON, R.: *ESCA and electrochemical studies on pyrolysed iron and cobalt tetraphenylporphyrins.* Electrochimica Acta, 37 (2) 187–197 (1992)
- [WONF89] WIESENER, K.; OHMS, D.; NEUMANN, V.; ET AL.: *N₄ macrocycles as electrocatalysts for the cathodic reduction of oxygen.* Materials Chemistry and Physics, 22 (3-4) 457–475 (1989)
- [Woo11] WOOD, R. W.: *Resonance Radiation and Specular Reflection in Mercury Vapor.* In *Physical Optics.* McMillan Company, New York (1911)
- [WVM88] VAN WINGERDEN, B.; VAN VEEN, J. A. R.; MENSCH, C. T. J.: *An extended X-ray absorption fine structure study of heat-treated cobalt porphyrin catalysts supported on active carbon.* Journal of the Chemical Society, Faraday Transactions 1, 84 (1) 65–74 (1988)
- [WWFPH89] WANG, S.; WALDO, G. S.; FRONKO, R.; ET AL.: *Polarized XANES of iron porphyrins.* Physica B: Condensed Matter, 158 (1-3) 119–120 (1989)
- [WWS00] WEI, G.; WAINRIGHT, J. S.; SAVINELL, R. F.: *Catalytic activity for oxygen reduction reaction of catalysts consisting of carbon, nitrogen and cobalt.* Journal of New Materials for Electrochemical Systems, 3 (2) 121 (2000)
- [Wyc63] WYCKOFF, R. W. G.: *Crystal Structures*, Bd. 1. John Wiley & Sons, New York, 2. Aufl. (1963)
- [XAF05] *XAFS Model Compound Library* (2005)
- [XJLX97] XIANGDONG, J.; JINWANG, H.; LIANGNIAN, J.; ET AL.: *Crystal and Molecular Structure of Meso-Tetra(2-Methoxyphenyl)porphinatocobalt(II).* Chinese Journal Of Inorganic Chemistry, 13 (2) 129–134 (1997)
- [Yea84] YEAGER, E.: *Electrocatalysts for O₂ reduction.* Electrochimica Acta, 29 (11) 1527–1537 (1984)
- [ZSA+97] ZEREINI, F.; SKERSTUPP, B.; ALT, F.; ET AL.: *Geochemical behaviour of platinum-group elements (PGE) in particulate emissions by automobile exhaust catalysts: experimental results and environmental investigations.* Science of The Total Environment, 206 (2-3) 137–146 (1997)