Richard Hanke-Rauschenbach

List of Publications by Year
in descending order

82 papers	2,576 citations	172386 29 h-index	206029 48 g-index
82 all docs	82 docs citations	82 times ranked	1923 citing authors

#	Article	IF	Citations
1	Is iridium demand a potential bottleneck in the realization of large-scale PEM water electrolysis?. International Journal of Hydrogen Energy, 2021, 46, 23581-23590.	3.8	153
2	Hydrogen Crossover in PEM and Alkaline Water Electrolysis: Mechanisms, Direct Comparison and Mitigation Strategies. Journal of the Electrochemical Society, 2018, 165, F502-F513.	1.3	144
3	Assessment of Methanol Synthesis Utilizing Exhaust CO₂ for Chemical Storage of Electrical Energy. Industrial & Engineering Chemistry Research, 2010, 49, 11073-11078.	1.8	131
4	Conceptual Design of Operation Strategies for Hybrid Electric Aircraft. Energies, 2018, 11, 217.	1.6	118
5	Current density effect on hydrogen permeation in PEM water electrolyzers. International Journal of Hydrogen Energy, 2017, 42, 14355-14366.	3.8	90
6	Modelling and Designing Cryogenic Hydrogen Tanks for Future Aircraft Applications. Energies, 2018, 11, 105.	1.6	90
7	Nonlinear frequency response analysis of PEM fuel cells for diagnosis of dehydration, flooding and CO-poisoning. Journal of Electroanalytical Chemistry, 2009, 630, 19-27.	1.9	78
8	Energetic evaluation of high pressure PEM electrolyzer systems for intermediate storage of renewable energies. Electrochimica Acta, 2013, 110, 570-580.	2.6	76
9	Optimal configuration and pressure levels of electrolyzer plants in context of power-to-gas applications. Applied Energy, 2016, 167, 107-124.	5.1	69
10	Biological methanation of hydrogen within biogas plants: A model-based feasibility study. Applied Energy, 2014, 134, 413-425.	5.1	66
11	Analysis and Design of Fuel Cell Systems for Aviation. Energies, 2018, 11, 375.	1.6	64
12	Experimental evidence of increasing oxygen crossover with increasing current density during PEM water electrolysis. Electrochemistry Communications, 2017, 82, 98-102.	2.3	60
13	Elucidating the Effect of Mass Transport Resistances on Hydrogen Crossover and Cell Performance in PEM Water Electrolyzers by Varying the Cathode Ionomer Content. Journal of the Electrochemical Society, 2019, 166, F465-F471.	1.3	54
14	In-situ measurement of hydrogen crossover in polymer electrolyte membrane water electrolysis. International Journal of Hydrogen Energy, 2014, 39, 49-53.	3.8	52
15	Membrane Interlayer with Pt Recombination Particles for Reduction of the Anodic Hydrogen Content in PEM Water Electrolysis. Journal of the Electrochemical Society, 2018, 165, F1271-F1277.	1.3	51
16	Degradation of Proton Exchange Membrane (PEM) Water Electrolysis Cells: Looking Beyond the Cell Voltage Increase. Journal of the Electrochemical Society, 2019, 166, F645-F652.	1.3	50
17	Enhancing PEM water electrolysis efficiency by reducing the extent of Ti gas diffusion layer passivation. Journal of Applied Electrochemistry, 2018, 48, 713-723.	1.5	47
18	Experimental characterization of inhomogeneity in current density and temperature distribution along a single-channel PEM water electrolysis cell. Electrochimica Acta, 2018, 260, 582-588.	2.6	45

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19	Modelling and dynamics of an air separation rectification column as part of an IGCC power plant. Separation and Purification Technology, 2006, 49, 136-148.	3.9	41
20	Autonomous potential oscillations at the Pt anode of a polymer electrolyte membrane fuel cell under CO poisoning. Electrochimica Acta, 2011, 56, 10593-10602.	2.6	40
21	Improved electrochemical CO removal via potential oscillations in serially connected PEM fuel cells with PtRu anodes. Electrochimica Acta, 2009, 54, 1184-1191.	2.6	39
22	Nonlinear dynamics of fuel cells: a review. Reviews in Chemical Engineering, 2011, 27, .	2.3	39
23	Local Current Density and Electrochemical Impedance Measurements within 50 cm Single-Channel PEM Electrolysis Cell. Journal of the Electrochemical Society, 2018, 165, F1292-F1299.	1.3	39
24	Three-dimensional microstructure analysis of a polymer electrolyte membrane water electrolyzer anode. Journal of Power Sources, 2018, 393, 62-66.	4.0	38
25	Steady-state analysis of the Anaerobic Digestion Model No. 1 (ADM1). Nonlinear Dynamics, 2013, 73, 535-549.	2.7	36
26	Dynamic Behavior of a PEM Fuel Cell During Electrochemical CO Oxidation on a PtRu Anode. Topics in Catalysis, 2008, 51, 89-97.	1.3	35
27	Nonlinear Frequency Response of Electrochemical Methanol Oxidation Kinetics: A Theoretical Analysis. Journal of the Electrochemical Society, 2010, 157, B1279.	1.3	35
28	Total harmonic distortion analysis for direct methanol fuel cell anode. Electrochemistry Communications, 2010, 12, 1517-1519.	2.3	33
29	Hydrogen Permeation in PEM Electrolyzer Cells Operated at Asymmetric Pressure Conditions. Journal of the Electrochemical Society, 2016, 163, F3164-F3170.	1.3	32
30	Modeling Overpotentials Related to Mass Transport Through Porous Transport Layers of PEM Water Electrolysis Cells. Journal of the Electrochemical Society, 2020, 167, 114511.	1.3	31
31	Effect of the MEA design on the performance of PEMWE single cells with different sizes. Journal of Applied Electrochemistry, 2018, 48, 701-711.	1.5	29
32	Nonlinear frequency response analysis of dehydration phenomena in polymer electrolyte membrane fuel cells. International Journal of Hydrogen Energy, 2012, 37, 7689-7701.	3.8	28
33	The Electro-Oxidation of<i>H</i>₂,<i>CO</i>in a Model PEM Fuel Cell: Oscillations, Chaos, Pulses. Journal of the Electrochemical Society, 2013, 160, F436-F446.	1.3	28
34	Theoretical dimensioning and sizing limits of hybrid energy storage systems. Applied Energy, 2018, 210, 127-137.	5.1	28
35	Electrical energy storage for industrial grid fee reduction â€“ A large scale analysis. Energy Conversion and Management, 2020, 208, 112539.	4.4	28
36	Mathematical Modeling of a Porous Enzymatic Electrode with Direct Electron Transfer Mechanism. Electrochimica Acta, 2014, 137, 616-626.	2.6	27

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37	Understanding PEM fuel cell dynamics: The reversal curve. International Journal of Hydrogen Energy, 2017, 42, 15818-15827.	3.8	27
38	Operating Behavior and Scale-Up of an ECPrOx Unit for CO Removal from Reformate for PEM Fuel Cell Application. Journal of the Electrochemical Society, 2009, 156, B1267.	1.3	24
39	Passivity based control of a distributed PEM fuel cell model. Journal of Process Control, 2010, 20, 292-313.	1.7	24
40	Femtosecond laser-induced surface structuring of the porous transport layers in proton exchange membrane water electrolysis. Journal of Materials Chemistry A, 2020, 8, 4898-4910.	5.2	24
41	Techno-economic and Environmental Comparison of Internal Combustion Engines and Solid Oxide Fuel Cells for Ship Applications. Journal of Power Sources, 2021, 508, 230328.	4.0	24
42	Oscillations and Pattern Formation in a PEM Fuel Cell with Pt/Ru Anode Exposed to H[sub 2]/CO Mixtures. Journal of the Electrochemical Society, 2010, 157, B1521.	1.3	22
43	Nonlinear frequency response analysis for the diagnosis of carbon monoxide poisoning in PEM fuel cell anodes. Journal of Applied Electrochemistry, 2011, 41, 1021-1032.	1.5	22
44	Concentration-alternating frequency response: A new method for studying polymer electrolyte membrane fuel cell dynamics. Electrochimica Acta, 2017, 243, 53-64.	2.6	22
45	Optimal design of a district energy system including supply for fuel cell electric vehicles. Applied Energy, 2018, 226, 129-144.	5.1	22
46	Analysis of Spatio-temporal Pattern Formation in a PEM Fuel Cell with Ptâˆ•Ru Anode Exposed to H[sub 2]âˆ•CO Mixtures. Journal of the Electrochemical Society, 2011, 158, B44.	1.3	21
47	Optimal Design of Power Gradient Limited Solid Oxide Fuel Cell Systems with Hybrid Storage Support for Ship Applications. Energy Conversion and Management, 2021, 243, 114396.	4.4	21
48	Autonomous Voltage Oscillations in a Direct Methanol Fuel Cell. Electrochimica Acta, 2016, 212, 545-552.	2.6	20
49	The S-Shaped Negative Differential Resistance during the Electrooxidation of H2/CO in Polymer Electrolyte Membrane Fuel Cells: Modeling and Experimental Proof. Journal of Physical Chemistry C, 2011, 115, 25315-25329.	1.5	19
50	The Effect of Cell Compression and Cathode Pressure on Hydrogen Crossover in PEM Water Electrolysis. Journal of the Electrochemical Society, 2022, 169, 014502.	1.3	19
51	Reactor configurations for biogas plants â€" a model based analysis. Chemical Engineering Science, 2013, 104, 413-426.	1.9	18
52	Diagnostic concept for dynamically operated biogas production plants. Renewable Energy, 2016, 96, 479-489.	4.3	18
53	Relating the N-shaped polarization curve of a PEM fuel cell to local oxygen starvation and hydrogen evolution. International Journal of Hydrogen Energy, 2013, 38, 15318-15327.	3.8	16
54	Evaluation of the Efficiency of an Elevated Temperature Proton Exchange Membrane Water Electrolysis System. Journal of the Electrochemical Society, 2021, 168, 094504.	1.3	15

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55	Hydrogen supply scenarios for a climate neutral energy system in Germany. International Journal of Hydrogen Energy, 2022, 47, 13515-13523.	3.8	14
56	Design Considerations for the Electrical Power Supply of Future Civil Aircraft with Active High-Lift Systems. Energies, 2018, 11, 179.	1.6	13
57	Optimal Design of a Distributed Ship Power System with Solid Oxide Fuel Cells under the Consideration of Component Malfunctions. Applied Energy, 2022, 316, 119052.	5.1	12
58	Bifurcation Analysis of a Two-Phase PEMFC Model. Journal of Fuel Cell Science and Technology, 2008, 5, .	0.8	11
59	The gas diffusion layer in polymer electrolyte membrane fuel cells: A process model of the two-phase flow. International Journal of Hydrogen Energy, 2011, 36, 1637-1653.	3.8	10
60	Temperature and Humidity Control of a Micro PEM Fuel Cell Stack. Fuel Cells, 2010, 10, 949-959.	1.5	9
61	(Invited) Engineering Modeling of PEM Water Electrolysis: A Survey. ECS Transactions, 2016, 75, 1065-1072.	0.3	9
62	Understanding Electrical Under- and Overshoots in Proton Exchange Membrane Water Electrolysis Cells. Journal of the Electrochemical Society, 2019, 166, F1200-F1208.	1.3	9
63	Investigation of Temperature and Pressure Behaviour of Constrained Lithium Ion Cell under Lithium Plating Conditions. Journal of the Electrochemical Society, 2020, 167, 110540.	1.3	9
64	Characterisation of batteries with Eâ€“P-curves: Quantifying the impact of operating conditions on battery performance. International Journal of Electrical Power and Energy Systems, 2018, 99, 722-732.	3.3	8
65	Energetic Evaluation and Optimization of Hydrogen Generation and Compression Pathways Considering PEM Water Electrolyzers and Electrochemical Hydrogen Compressors. Journal of the Electrochemical Society, 2021, 168, 014504.	1.3	8
66	Some reaction engineering challenges in fuel cells: dynamics integration, renewable fuels, enzymes. Current Opinion in Chemical Engineering, 2012, 1, 328-335.	3.8	6
67	On the design of cascades of ECPrOx reactors for deep CO removal from reformate gas. Chemical Engineering Science, 2012, 67, 34-43.	1.9	6
68	Impact of Pressure and Temperature on Hydrogen Permeation in PEM Water Electrolyzers Operated at Asymmetric Pressure Conditions. ECS Transactions, 2016, 75, 1081-1094.	0.3	6
69	Communicationâ€”Proving the Importance of Pt-Interlayer Position in PEMWE Membranes for the Effective Reduction of the Anodic Hydrogen Content. Journal of the Electrochemical Society, 2021, 168, 094509.	1.3	6
70	OrtsaufgelÃ¶ste Stromdichtemessung in PEMâ€Elektrolyseâ€Zellen. Chemie-Ingenieur-Technik, 2019, 91, 907-918.	0.4	4
71	An engineering perspective on the future role of modelling in proton exchange membrane water electrolysis development. Current Opinion in Chemical Engineering, 2022, 36, 100829.	3.8	3
72	Influence of the autonomous oscillations and the CO concentration on the performance of an ECPrOx reactor. Electrochimica Acta, 2017, 251, 602-612.	2.6	2

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73	Spatiotemporal pattern formation in an electrochemical membrane reactor during deep CO removal from reformate gas. Computer Aided Chemical Engineering, 2011, 29, 201-205.	0.3	2
74	Model Simulation and Analysis of Proton Incorporation into the Positive Active Mass of a Lead/Acid Battery. Journal of the Electrochemical Society, 2010, 157, A243.	1.3	1
75	Steady-state multiplicity of a biogas production system based on anaerobic digestion. Computer Aided Chemical Engineering, 2012, , 1377-1381.	0.3	1
76	Fuel Cell Power Control Based on a Master-Slave Structure: A Proton Exchange Membrane Fuel Cell Case Study. Journal of Fuel Cell Science and Technology, 2012, 9, .	0.8	1
77	Catalyst Layer Modeling. , 2017, , 259-285.		1
78	Evaluating the influence of requirements in fuel cell system design using Design Requirement Maps. Fuel Cells, 2021, 21, 347-362.	1.5	1
79	Model-Based Analysis of Low Stoichiometry Operation in Proton Exchange Membrane Water Electrolysis. Membranes, 2021, 11, 696.	1.4	1
80	Development of an Oxygen Mass Transport Coefficient Measurement and Separation Method for Proton Exchange Membrane Fuel Cells. ECS Transactions, 2020, 98, 153-162.	0.3	1
81	Chemische Speicherung von erneuerbarer Energie durch Reduktion von CO₂. Chemie-Ingenieur-Technik, 2009, 81, 1138-1138.	0.4	0
82	Reference Electrodes in PEM Water Electrolysis â€“ a Review and Experimental Investigation of Oxygen and Hydrogen Evolution Reaction Kinetics. ECS Meeting Abstracts, 2022, MA2022-01, 1372-1372.	0.0	0