Huayang Zhu

List of Publications by Year
in descending order

66 papers	4,848 citations	101543 36 h-index	114465 63 g-index
69 all docs	69 docs citations	69 times ranked	3578 citing authors

#	Article	IF	Citations
1	Highly durable, coking and sulfur tolerant, fuel-flexible protonic ceramic fuel cells. Nature, 2018, 557, 217-222.	27.8	500
2	Modeling Elementary Heterogeneous Chemistry and Electrochemistry in Solid-Oxide Fuel Cells. Journal of the Electrochemical Society, 2005, 152, A2427.	2.9	427
3	Highly efficient reversible protonic ceramic electrochemical cells for power generation and fuel production. Nature Energy, 2019, 4, 230-240.	39.5	419
4	Methane reforming kinetics within a Niâ€“YSZ SOFC anode support. Applied Catalysis A: General, 2005, 295, 40-51.	4.3	290
5	A general mathematical model for analyzing the performance of fuel-cell membrane-electrode assemblies. Journal of Power Sources, 2003, 117, 61-74.	7.8	278
6	Methanation of carbon dioxide by hydrogen reduction using the Sabatier process in microchannel reactors. Chemical Engineering Science, 2007, 62, 1161-1170.	3.8	249
7	Percolation theory to predict effective properties of solid oxide fuel-cell composite electrodes. Journal of Power Sources, 2009, 191, 240-252.	7.8	176
8	Modeling Distributed Charge-Transfer Processes in SOFC Membrane Electrode Assemblies. Journal of the Electrochemical Society, 2008, 155, B715.	2.9	145
9	Effects of three-dimensional cathode microstructure on the performance of lithium-ion battery cathodes. Electrochimica Acta, 2013, 88, 580-588.	5.2	144
10	Solid-oxide fuel cells with hydrocarbon fuels. Proceedings of the Combustion Institute, 2005, 30, 2379-2404.	3.9	131
11	Modeling Electrochemical Oxidation of Hydrogen on Niâ€“YSZ Pattern Anodes. Journal of the Electrochemical Society, 2009, 156, B1004.	2.9	123
12	Solid Oxide Fuel Cells: Operating Principles, Current Challenges, and the Role of Syngas. Combustion Science and Technology, 2008, 180, 1207-1244.	2.3	99
13	The design, fabrication, and evaluation of a ceramic counter-flow microchannel heat exchanger. Applied Thermal Engineering, 2011, 31, 2004-2012.	6.0	91
14	Stability and coking of direct-methane solid oxide fuel cells: Effect of CO2 and air additions. Journal of Power Sources, 2010, 195, 271-279.	7.8	83
15	A particle-based model for predicting the effective conductivities of composite electrodes. Journal of Power Sources, 2010, 195, 6671-6679.	7.8	83
16	Modeling Electrochemical Impedance Spectra in SOFC Button Cells with Internal Methane Reforming. Journal of the Electrochemical Society, 2006, 153, A1765.	2.9	75
17	Homogeneous kinetics and equilibrium predictions of coking propensity in the anode channels of direct oxidation solid-oxide fuel cells using dry natural gas. Journal of Power Sources, 2003, 123, 182-189.	7.8	74
18	A Computational Model of the Mechanical Behavior within Reconstructed LixCoO2 Li-ion Battery Cathode Particles. Electrochimica Acta, 2014, 130, 707-717.	5.2	71

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19	A modified dusty gas model in the form of a Fick's model for the prediction of multicomponent mass transport in a solid oxide fuel cell anode. Journal of Power Sources, 2012, 206, 171-178.	7.8	70
20	The influence of current collection on the performance of tubular anode-supported SOFC cells. Journal of Power Sources, 2007, 169, 315-326.	7.8	69
21	Defect Incorporation and Transport within Dense BaZr_{0.8}Y_{0.2}O_{3 âˆ’ Î´}(BZY20) Proton-Conducting Membranes. Journal of the Electrochemical Society, 2018, 165, F581-F588.	2.9	69
22	Thermodynamics of SOFC efficiency and fuel utilization as functions of fuel mixtures and operating conditions. Journal of Power Sources, 2006, 161, 957-964.	7.8	67
23	Modeling the Steady-State and Transient Response of Polarized and Non-Polarized Proton-Conducting Doped-Perovskite Membranes. Journal of the Electrochemical Society, 2013, 160, F290-F300.	2.9	60
24	Anode barrier layers for tubular solid-oxide fuel cells with methane fuel streams. Journal of Power Sources, 2006, 161, 413-419.	7.8	58
25	Membrane polarization in mixed-conducting ceramic fuel cells and electrolyzers. International Journal of Hydrogen Energy, 2016, 41, 2931-2943.	7.1	57
26	A detailed reaction mechanism for oxidative coupling of methane over Mn/Na2WO4/SiO2 catalyst for non-isothermal conditions. Catalysis Today, 2018, 312, 10-22.	4.4	55
27	Multidimensional flow, thermal, and chemical behavior in solid-oxide fuel cell button cells. Journal of Power Sources, 2009, 187, 123-135.	7.8	54
28	Gas-phase reactions of methane and natural-gas with air and steam in non-catalytic regions of a solid-oxide fuel cell. Journal of Power Sources, 2006, 156, 434-447.	7.8	50
29	Interpreting equilibrium-conductivity and conductivity-relaxation measurements to establish thermodynamic and transport properties for multiple charged defect conducting ceramics. Faraday Discussions, 2015, 182, 49-74.	3.2	49
30	Process intensification in the catalytic conversion of natural gas to fuels and chemicals. Proceedings of the Combustion Institute, 2017, 36, 51-76.	3.9	47
31	Detailed Reaction Mechanisms for the Oxidative Coupling of Methane over La₂O₃/CeO₂ Nanofiber Fabric Catalysts. ChemCatChem, 2017, 9, 4538-4551.	3.7	46
32	Catalytic Chemistry for Methane Dehydroaromatization (MDA) on a Bifunctional Mo/HZSM-5 Catalyst in a Packed Bed. Industrial & Engineering Chemistry Research, 2016, 55, 9895-9906.	3.7	45
33	Importance of Anode Microstructure in Modeling Solid Oxide Fuel Cells. Journal of the Electrochemical Society, 2008, 155, B538.	2.9	43
34	Polarization Characteristics and Chemistry in Reversible Tubular Solid-Oxide Cells Operating on Mixtures of H[sub 2], CO, H[sub 2]O, and CO[sub 2]. Journal of the Electrochemical Society, 2011, 158, B117.	2.9	42
35	Interpretation of Defect and Gas-Phase Fluxes through Mixed-Conducting Ceramics Using Nernstâ€"Planckâ€"Poisson and Integral Formulations. Journal of the Electrochemical Society, 2014, 161, F114-F124.	2.9	41
36	Three-dimensional quantification of composition and electrostatic potential at individual grain boundaries in doped ceria. Journal of Materials Chemistry A, 2016, 4, 5167-5175.	10.3	39

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37	Probing Grain-Boundary Chemistry and Electronic Structure in Proton-Conducting Oxides by Atom Probe Tomography. Nano Letters, 2016, 16, 6924-6930.	9.1	36
38	Catalytic partial oxidation of methane using RhSr- and Ni-substituted hexaaluminates. Proceedings of the Combustion Institute, 2007, 31, 1965-1972.	3.9	30
39	Modeling electrochemical partial oxidation of methane for cogeneration of electricity and syngas in solid-oxide fuel cells. Journal of Power Sources, 2008, 183, 143-150.	7.8	29
40	Percolation micro-model to predict the effective properties of the composite electrode with poly-dispersed particle sizes. Journal of Power Sources, 2011, 196, 3178-3185.	7.8	29
41	Modeling Protonic-Ceramic Fuel Cells with Porous Composite Electrodes in a Button-Cell Configuration. Journal of the Electrochemical Society, 2017, 164, F1400-F1411.	2.9	29
42	A Model-Based Interpretation of the Influence of Anode Surface Chemistry on Solid Oxide Fuel Cell Electrochemical Impedance Spectra. Journal of the Electrochemical Society, 2012, 159, F255-F266.	2.9	28
43	Solid Oxide Fuel Cell with Oxide Anode-Side Support. Electrochemical and Solid-State Letters, 2008, 11, B174.	2.2	25
44	On the Fundamental and Practical Aspects of Modeling Complex Electrochemical Kinetics and Transport. Journal of the Electrochemical Society, 2018, 165, E637-E658.	2.9	20
45	Performance predictions of a tubular SOFC operating on a partially reformed JP-8 surrogate. Journal of Power Sources, 2006, 162, 553-562.	7.8	19
46	Thermodynamic Insights for Electrochemical Hydrogen Compression with Proton-Conducting Membranes. Membranes, 2019, 9, 77.	3.0	18
47	Chemo-Thermo-Mechanical Coupling in Protonic Ceramic Fuel Cells from Fabrication to Operation. Journal of the Electrochemical Society, 2019, 166, F1007-F1015.	2.9	18
48	Fabrication and evaluation of solid-oxide fuel cell anodes employing reaction-sintered yttria-stabilized zirconia. Journal of Power Sources, 2009, 193, 706-712.	7.8	16
49	The Influence of Hydrogen-Permeable Membranes and Pressure on Methane Dehydroaromatization in Packed-Bed Catalytic Reactors. Industrial & Engineering Chemistry Research, 2017, 56, 3551-3559.	3.7	15
50	Two-dimensional model of distributed charge transfer and internal reforming within unit cells of segmented-in-series solid-oxide fuel cells. Journal of Power Sources, 2011, 196, 7654-7664.	7.8	14
51	Analysis, Optimization, and Control of Solid-Oxide Fuel Cell Systems. Advances in Chemical Engineering, 2012, , 383-446.	0.9	13
52	Boundaryâ€Layer Model to Predict Chemically Reacting Flow within Heated, Highâ€Speed, Microtubular Reactors. International Journal of Chemical Kinetics, 2018, 50, 473-480.	1.6	12
53	Faradaic efficiency in protonic-ceramic electrolysis cells. JPhys Energy, 2022, 4, 014002.	5.3	12
54	Vaporisation characteristics of methanol, ethanol and heptane droplets in opposed stagnation flow at low temperature and pressure. Combustion Theory and Modelling, 2012, 16, 715-735.	1.9	10

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55	Modeling the Steady-State and Dynamic Characteristics of Solid-Oxide Fuel Cells. Advances in Chemical Engineering, 2012, , 331-381.	0.9	10
56	Equilibrium thermodynamic predictions of coking propensity in membrane-based dehydrogenation of hydrocarbons and alcohols. Catalysis Today, 2019, 331, 7-11.	4.4	10
57	Measurement and Characterization of a High-Temperature, Coke-Resistant Bi-functional Ni/BZY15 Water-Gas-Shift Catalyst Under Steam-Reforming Conditions. Catalysis Letters, 2018, 148, 3592-3607.	2.6	9
58	Thermodynamic Analysis of Energy Efficiency and Fuel Utilization in Protonic-Ceramic Fuel Cells with Planar Co-Flow Configurations. Journal of the Electrochemical Society, 2018, 165, F942-F950.	2.9	9
59	Modeling Distributed Charge-Transfer Processes in Membrane Electrode Assemblies with Mixed-Conducting Composite Electrodes. ECS Transactions, 2007, 7, 1869-1878.	0.5	6
60	Modeling Electro-Chemo-Mechanical Behaviors within the Dense BaZr0.8Y0.2O3â^'Î´ Protonic-Ceramic Membrane in a Long Tubular Electrochemical Cell. Membranes, 2021, 11, 378.	3.0	4
61	Physically Based Model-Predictive Control for SOFC Stacks and Systems. ECS Transactions, 2009, 25, 1175-1184.	0.5	3
62	Perspectives on Technical Challenges and Scaling Considerations for Tubular Protonic-Ceramic Electrolysis Cells and Stacks. Journal of the Electrochemical Society, 2022, 169, 054525.	2.9	2
63	Modeling ammonia-fueled co-flow dual-channel protonic-ceramic fuel cells. International Journal of Green Energy, 2022, 19, 1568-1582.	3.8	1
64	Separated Anode Experiment to Measure Gas Transport and Methane Reforming within Solid-Oxide Fuel Cell Anodes. Materials Research Society Symposia Proceedings, 2012, 1385, 1.	0.1	0
65	Pore-Scale Phenomena and Challenges in Energy Research and Technology. World Scientific Series in Nanoscience and Nanotechnology, 2015, , 305-338.	0.1	0
66	Self-contained Electrochemical Process to Produce Pure Compressed Hydrogen from Hydrocarbons and Steam Without an External Energy Supply. Journal of the Electrochemical Society, 2020, 167, 104512.	2.9	0