Michael R Von Spakovsky

List of Publications by Year
in descending order

84 papers	2,399 citations	304368 22 h-index	214527 47 g-index
87 all docs	87 docs citations	87 times ranked	1562 citing authors

#	Article	IF	Citations
1	Entropy-driven microstructure evolution predicted with the steepest-entropy-ascent quantum thermodynamic framework. Acta Materialia, 2022, 237, 118163.	3.8	4
2	Electro-chemo-mechanical model to investigate multi-pulse electric-field-driven integrin clustering. Bioelectrochemistry, 2021, 137, 107638.	2.4	2
3	Theoretical Frameworks for Predicting the Chemical Kinetics of High-Temperature Flows: A Brief Review. , 2021, , .		1
4	A thermodynamic scaling law for electrically perturbed lipid membranes: Validation with steepest entropy ascent framework. Bioelectrochemistry, 2021, 140, 107800.	2.4	4
5	Kinetic pathways of ordering and phase separation using classical solid state models within the steepest-entropy-ascent quantum thermodynamic framework. Acta Materialia, 2020, 182, 87-99.	3.8	8
6	Loss-of-entanglement prediction of a controlled-phase gate in the framework of steepest-entropy-ascent quantum thermodynamics. Physical Review A, 2020, 101, .	1.0	7
7	Predicting the Chemical Kinetics of Air at High Temperatures Using Steepest-Entropy-Ascent Quantum Thermodynamics. , 2020, , .		2
8	Propagating Uncertainty in Power System Dynamic Simulations Using Polynomial Chaos. IEEE Transactions on Power Systems, 2019, 34, 338-348.	4.6	65
9	Methodology of an application of the steepest-entropy-ascent quantum thermodynamic framework to physical phenomena in materials science. Computational Materials Science, 2019, 166, 251-264.	1.4	11
10	Predicting continuous and discontinuous phase decompositions using steepest-entropy-ascent quantum thermodynamics. Physical Review E, 2019, 99, 052121.	0.8	12
11	CH4 Adsorption Probability on GaN(0001) and (000â̄1) during Metalorganic Vapor Phase Epitaxy and Its Relationship to Carbon Contamination in the Films. Materials, 2019, 12, 972.	1.3	10
12	Effects of Producer and Transmission Reliability on the Sustainability Assessment of Power System Networks. Energies, 2019, 12, 546.	1.6	3
13	Low-temperature atomistic spin relaxation and non-equilibrium intensive properties using steepest-entropy-ascent quantum-inspired thermodynamics modeling. Journal of Physics Condensed Matter, 2019, 31, 505901.	0.7	8
14	Steepest entropy ascent quantum thermodynamic model of electron and phonon transport. Physical Review B, 2018, 97, .	1.1	20
15	Multiscale Transient and Steady-State Study of the Influence of Microstructure Degradation and Chromium Oxide Poisoning on Solid Oxide Fuel Cell Cathode Performance. Journal of Non-Equilibrium Thermodynamics, 2018, 43, 21-42.	2.4	17
16	Steepest-entropy-ascent model of mesoscopic quantum systems far from equilibrium along with generalized thermodynamic definitions of measurement and reservoir. Physical Review E, 2018, 98, .	0.8	16
17	A method for predicting non-equilibrium thermal expansion using steepest-entropy-ascent quantum thermodynamics. Journal of Physics Condensed Matter, 2018, 30, 325901.	0.7	13
18	Influence of Pulsed Electric Fields and Mitochondria-Cytoskeleton Interactions on Cell Respiration. Biophysical Journal, 2018, 114, 2951-2964.	0.2	19

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19	Ab initiorelaxation times and time-dependent Hamiltonians within the steepest-entropy-ascent quantum thermodynamic framework. Physical Review E, 2017, 96, 022129.	0.8	3
20	Steepest-entropy-ascent nonequilibrium quantum thermodynamic framework to model chemical reaction rates at an atomistic level. Physical Review E, 2017, 95, 042139.	0.8	15
21	Study of Nonequilibrium Size and Concentration Effects on the Heat and Mass Diffusion of Indistinguishable Particles Using Steepest-Entropy-Ascent Quantum Thermodynamics. Journal of Heat Transfer, 2017, 139, .	1.2	18
22	Modeling the Non-Equilibrium Process of the Chemical Adsorption of Ammonia on GaN(0001) Reconstructed Surfaces Based on Steepest-Entropy-Ascent Quantum Thermodynamics. Materials, 2017, 10, 948.	1.3	12
23	Modeling the nonequilibrium effects in a nonquasi-equilibrium thermodynamic cycle based on steepest entropy ascent and an isothermal-isobaric ensemble. Energy, 2016, 115, 498-512.	4.5	22
24	Generalized thermodynamic relations for a system experiencing heat and mass diffusion in the far-from-equilibrium realm based on steepest entropy ascent. Physical Review E, 2016, 94, 032117.	0.8	26
25	Steepest-entropy-ascent quantum thermodynamic modeling of the relaxation process of isolated chemically reactive systems using density of states and the concept of hypoequilibrium state. Physical Review E, 2016, 93, 012137.	0.8	30
26	Upper Level of a Sustainability Assessment Framework for Power System Planning. Journal of Energy Resources Technology, Transactions of the ASME, 2015, 137, .	1.4	4
27	Application of Steepest-Entropy-Ascent Quantum Thermodynamics to Predicting Heat and Mass Diffusion From the Atomistic Up to the Macroscopic Level. , 2015, , .		2
28	Study of the Transient Behavior and Microstructure Degradation of a SOFC Cathode Using an Oxygen Reduction Model Based on Steepest-Entropy-Ascent Quantum Thermodynamics. , 2015, , .		3
29	Steepest-entropy-ascent quantum thermodynamic modeling of decoherence in two different microscopic composite systems. Physical Review A, 2015, 91, .	1.0	33
30	Some Trends in Quantum Thermodynamics. Entropy, 2014, 16, 3434-3470.	1.1	30
31	Atomistic-level non-equilibrium model for chemically reactive systems based on steepest-entropy-ascent quantum thermodynamics. Journal of Physics: Conference Series, 2014, 538, 012013.	0.3	13
32	Steepest-Entropy-Ascent Quantum Thermodynamic Non-Equilibrium Modeling of Decoherence of a Composite System of Two Interacting Spin-½ Systems. , 2013, , .		3
33	Multi-Objective Optimization for the Sustainable-Resilient Synthesis/Design/Operation of a Power Network Coupled to Distributed Power Producers via Microgrids. , 2012, , .		10
34	Comparison of the non-equilibrium predictions of Intrinsic Quantum Thermodynamics at the atomistic level with experimental evidence. Journal of Physics: Conference Series, 2012, 380, 012015.	0.3	13
35	On the nature of the heat transfer feasibility constraint in the optimal synthesis/design of complex energy systems. Energy, 2012, 41, 236-243.	4.5	3
36	Sustainability and reliability assessment of microgrids in a regional electricity market. Energy, 2012, 41, 192-202.	4.5	68

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37	Dynamic optimization under uncertainty of the synthesis/design and operation/control of a proton exchange membrane fuel cell system. Journal of Power Sources, 2012, 205, 252-263.	4.0	16
38	A hybrid multi-level optimization approach for the dynamic synthesis/design and operation/control under uncertainty of a fuel cell system. Energy, 2011, 36, 3933-3943.	4.5	21
39	Comparison of the Non-Equilibrium Predictions of Quantum Thermodynamics at the Atomistic Level With Experimental Evidence. , 2011, , .		1
40	Criteria for the decomposition of energy systems in local/global optimizations. Energy, 2010, 35, 1157-1163.	4.5	17
41	Development of a Detailed Planar Solid Oxide Fuel Cell Computational Fluid Dynamics Model for Analyzing Cell Performance Degradation. Journal of Fuel Cell Science and Technology, 2009, 6, .	0.8	8
42	Thermoeconomic Modeling and Parametric Study of Hybrid Solid Oxide Fuel Cell-Gas Turbine-Steam Turbine Power Plants Ranging From 1.5MWeto10MWe. Journal of Fuel Cell Science and Technology, 2009, 6, .	0.8	21
43	A Multidiscipline and Multi-rate Modeling Framework for Planar Solid-oxide-fuel-cell based Power-Conditioning System for Vehicular APU. Simulation, 2008, 84, 413-426.	1.1	3
44	Stochastic Modeling and Uncertainty Analysis With Multi-Objective Optimization Strategies for the Synthesis/Design and Operation/Control of a PEMFC Fuel Processing Subsystem. , 2008, , .		1
45	Dynamic Synthesis/Design and Operation/Control Optimization Under Uncertainty of a PEMFC System. , 2008, , .		1
46	Discussion on â€œTeaching the Second Lawâ€• , 2008, , .		0
47	The Second Law: A Unified Approach to Thermodynamics Applicable to All Systems and All States. , 2008, , .		3
48	Use of State Space in the Dynamic Synthesis/Design and Operation/Control Optimization of a PEMFC System. , 2008, , .		2
49	Multi- Versus Single-Level Dynamic Synthesis/Design and Operation/Control Optimizations of a PEMFC System. , 2008, , .		3
50	Quantum Thermodynamics for the Modeling of Hydrogen Storage on a Carbon Nanotube. , 2008, , .		0
51	3D Microstructure Reconstructions of Solid Oxide and Proton Exchange Membrane Fuel Cell Electrodes With Applications to Numerical Simulations of Reacting Mixture Flows Using LBM. , 2007, , 643.		2
52	Effects of Battery Buffering on the Post-Load-Transient Performance of a PSOFC. IEEE Transactions on Energy Conversion, 2007, 22, 457-466.	3.7	16
53	Full load synthesis/design optimization of a hybrid SOFCâ€"GT power plant. Energy, 2007, 32, 446-458.	4.5	109
54	Direct numerical calculation of the kinematic tortuosity of reactive mixture flow in the anode layer of solid oxide fuel cells by the lattice Boltzmann method. Journal of Power Sources, 2007, 170, 359-375.	4.0	75

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55	Exergy Methods Applied to the Integrated Mission-Level Analysis and Optimization of Hypersonic Vehicle Concepts. , 2007, , .		3
56	Thermodynamics as a General Science That Applies to All Systems and All States: Fundamental and Pedagogical Aspects of a New Paradigm. , 2007, , .		0
57	Benefits and design challenges of adaptive structures for morphing aircraft. Aeronautical Journal, 2006, 110, 157-162.	1.1	41
58	On the influence of temperature on PEM fuel cell operation. Journal of Power Sources, 2006, 159, 560-569.	4.0	55
59	Single-level optimization of a hybrid SOFCâ€“GT power plant. Journal of Power Sources, 2006, 159, 1169-1185.	4.0	127
60	Decomposition with thermoeconomic isolation applied to the optimal synthesis/design and operation of an advanced tactical aircraft system. Energy, 2006, 31, 3327-3341.	4.5	12
61	Numerical Simulations of Reactive Mixture Flow in the Anode Layer of Solid Oxide Fuel Cells by the Lattice Boltzmann Method. , 2006, , 221.		4
62	Multi-Point Energy and Exergy Analysis of a 1.5 MWe Hybrid SOFC-GT Power Plant. , 2006, , .		1
63	Development and Application of a Dynamic Decomposition Strategy for the Optimal Synthesis/Design and Operational/Control of a SOFC Based APU Under Transient Conditions. , 2005, , 573.		7
64	Numerical Simulations of Gaseous Mixture Flow in Porous Electrodes for PEM Fuel Cells by the Lattice Boltzmann Method. , 2005, , .		5
65	Optimal Synthesis/Design of a Pem Fuel Cell Cogeneration System for Multi-Unit Residential Applicationsâ€“Application of a Decomposition Strategy. Journal of Energy Resources Technology, Transactions of the ASME, 2004, 126, 30-39.	1.4	11
66	Development of Thermodynamic, Geometric, and Economic Models for Use in the Optimal Synthesis/Design of a PEM Fuel Cell Cogeneration System for Multi-Unit Residential Applications. Journal of Energy Resources Technology, Transactions of the ASME, 2004, 126, 21-29.	1.4	11
67	A two-dimensional computational model of a PEMFC with liquid water transport. Journal of Power Sources, 2004, 128, 173-184.	4.0	242
68	Solid-Oxide-Fuel-Cell Performance and Durability: Resolution of the Effects of Power-Conditioning Systems and Application Loads. IEEE Transactions on Power Electronics, 2004, 19, 1263-1278.	5.4	90
69	Single domain PEMFC model based on agglomerate catalyst geometry. Journal of Power Sources, 2003, 115, 81-89.	4.0	210
70	Decomposition in Energy System Synthesis/Design Optimization for Stationary and Aerospace Applications. Journal of Aircraft, 2003, 40, 35-42.	1.7	18
71	Quantum-theoretic Shapes of Constituents of Systems in Various States. Journal of Energy Resources Technology, Transactions of the ASME, 2003, 125, 1-8.	1.4	3
72	A Decomposition Strategy Applied to the Optimal Synthesis/Design and Operation of an Advanced Fighter Aircraft System: A Comparison With and Without Airframe Degrees of Freedom. , 2003, , 477.		21

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73	Stacking Up. Mechanical Engineering, 2003, 125, 36-39.	0.0	1
74	A Decomposition Strategy Based on Thermoeconomic Isolation Applied to the Optimal Synthesis/Design and Operation of a Fuel Cell Based Total Energy System. , 2002, , 379.		19
75	Fuel cell systems and system modeling and analysis perspectives for fuel cell development. Energy Conversion and Management, 2002, 43, 1249-1257.	4.4	46
76	The Thermoeconomic and Environomic Modeling and Optimization of the Synthesis, Design, and Operation of Combined Cycles With Advanced Options. Journal of Engineering for Gas Turbines and Power, 2001, 123, 717-726.	0.5	44
77	An environomic approach for the modeling and optimization of a district heating network based on centralized and decentralized heat pumps, cogeneration and/or gas furnace. Part I: Methodology. International Journal of Thermal Sciences, 2000, 39, 721-730.	2.6	41
78	An environomic approach for the modeling and optimization of a district heating network based on centralized and decentralized heat pumps, cogeneration and/or gas furnace. Part II: Application. International Journal of Thermal Sciences, 2000, 39, 731-741.	2.6	48
79	Decomposition in energy system synthesis/design optimization for stationary and aerospace applications. , 2000, , .		0
80	Finite time generalization of thermal exergy. Energy Conversion and Management, 1998, 39, 1423-1447.	4.4	45
81	CO_2 mitigation through the use of hybrid solar-combined cycles. Energy Conversion and Management, 1997, 38, S661-S667.	4.4	30
82	CGAM problem: Definition and conventional solution. Energy, 1994, 19, 279-286.	4.5	306
83	Application of engineering functional analysis to the analysis and optimization of the CGAM problem. Energy, 1994, 19, 343-364.	4.5	117
84	A Multiâ€" / Interâ€"Disciplinary Approach to Fuel Cell System Development: The U.S. DoE GATE Center for Automotive Fuel Cell Systems at Virginia Tech. , 0, , .		4