Venkat R Subramanian

List of Publications by Year
in descending order

92	4,763	304743	197818
papers	citations	22 h-index	49 g-index

98	98	98	4694
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Pathways for practical high-energy long-cycling lithium metal batteries. Nature Energy, 2019, 4, 180-186.	39.5	2,101
2	Modeling and Simulation of Lithium-Ion Batteries from a Systems Engineering Perspective. Journal of the Electrochemical Society, 2012, 159, R31-R45.	2.9	540
3	Efficient Macro-Micro Scale Coupled Modeling of Batteries. Journal of the Electrochemical Society, 2005, 152, A2002.	2.9	292
4	Mathematical Model Reformulation for Lithium-Ion Battery Simulations: Galvanostatic Boundary Conditions. Journal of the Electrochemical Society, 2009, 156, A260.	2.9	227
5	Parameter Estimation and Capacity Fade Analysis of Lithium-Ion Batteries Using Reformulated Models. Journal of the Electrochemical Society, 2011, 158, A1048.	2.9	155
6	Coordinate Transformation, Orthogonal Collocation, Model Reformulation and Simulation of Electrochemical-Thermal Behavior of Lithium-Ion Battery Stacks. Journal of the Electrochemical Society, 2011, 158, A1461.	2.9	154
7	Approximate Solutions for Galvanostatic Discharge of Spherical Particles I. Constant Diffusion Coefficient. Journal of the Electrochemical Society, 2001, 148, E444.	2.9	126
8	Efficient Reformulation of Solid-Phase Diffusion in Physics-Based Lithium-Ion Battery Models. Journal of the Electrochemical Society, 2010, 157, A854.	2.9	120
9	Toward Real-Time Simulation of Physics Based Lithium-Ion Battery Models. Electrochemical and Solid-State Letters, 2007, 10, A255.	2.2	99
10	Efficient Simulation and Reformulation of Lithium-Ion Battery Models for Enabling Electric Transportation. Journal of the Electrochemical Society, 2014, 161, E3149-E3157.	2.9	67
11	TRANSFORM-ANN for online optimization of complex industrial processes: Casting process as case study. European Journal of Operational Research, 2018, 264, 294-309.	5.7	65
12	Computational Methods in Chemical Engineering with Maple. , 2010, , .		64
13	Data science: Accelerating innovation and discovery in chemical engineering. AICHE Journal, 2016, 62, 1402-1416.	3.6	63
14	Towards real-time (milliseconds) parameter estimation of lithium-ion batteries using reformulated physics-based models. Journal of Power Sources, 2008, 183, 361-365.	7.8	59
15	Model-Based SEI Layer Growth and Capacity Fade Analysis for EV and PHEV Batteries and Drive Cycles. Journal of the Electrochemical Society, 2014, 161, A2099-A2108.	2.9	57
16	A Boundary Condition for Porous Electrodes. Electrochemical and Solid-State Letters, 2004, 7, A259.	2.2	51
17	Data Science Approaches for Electrochemical Engineers: An Introduction through Surrogate Model Development for Lithium-Ion Batteries. Journal of the Electrochemical Society, 2018, 165, A1-A15.	2.9	49
18	Chitosan hydrogel-based electrode binder and electrolyte membrane for EDLCs: experimental studies and model validation. Journal of Applied Electrochemistry, 2012, 42, 935-943.	2.9	48

#	Article	IF	Citations
19	Efficient Simulation and Model Reformulation of Two-Dimensional Electrochemical Thermal Behavior of Lithium-Ion Batteries. Journal of the Electrochemical Society, 2015, 162, A940-A951.	2.9	44
20	Real-time Nonlinear Model Predictive Control (NMPC) Strategies using Physics-Based Models for Advanced Lithium-ion Battery Management System (BMS). Journal of the Electrochemical Society, 2020, 167, 063505.	2.9	34
21	Extending explicit and linearly implicit ODE solvers for index-1 DAEs. Computers and Chemical Engineering, 2015, 82, 283-292.	3.8	23
22	Dynamic Electrochemical Impedance Spectroscopy of Lithium-ion Batteries: Revealing Underlying Physics through Efficient Joint Time-Frequency Modeling. Journal of the Electrochemical Society, 2021, 168, 010526.	2.9	23
23	Lithium-ion battery physics and statistics-based state of health model. Journal of Power Sources, 2021, 501, 230032.	7.8	23
24	(Invited) Analyzing and Minimizing Capacity Fade through Optimal Model-based Control - Theory and Experimental Validation. ECS Transactions, 2017, 75, 51-75.	0.5	20
25	Modeling the Cooperative Adsorption of Solid-Binding Proteins on Silica: Molecular Insights from Surface Plasmon Resonance Measurements. Langmuir, 2019, 35, 5013-5020.	3.5	20
26	Analytical solution for electrolyte concentration distribution in lithium-ion batteries. Journal of Applied Electrochemistry, 2012, 42, 189-199.	2.9	19
27	A Minimal Information Set To Enable Verifiable Theoretical Battery Research. ACS Energy Letters, 2021, 6, 3831-3835.	17.4	19
28	A Semianalytical Method for Predicting Primary and Secondary Current Density Distributions: Linear and Nonlinear Boundary Conditions. Journal of the Electrochemical Society, 2000, 147, 1636.	2.9	18
29	A perturbation approach for consistent initialization of index-1 explicit differentialâ€“algebraic equations arising from battery model simulations. Computers and Chemical Engineering, 2011, 35, 2227-2234.	3.8	18
30	Open Data, Models, and Codes for Vanadium Redox Batch Cell Systems: A Systems Approach Using Zero-Dimensional Models. Journal of Electrochemical Energy Conversion and Storage, 2020, 17, .	2.1	13
31	Properly Lumped Lithium-ion Battery Models: A Tanks-in-Series Approach. Journal of the Electrochemical Society, 2020, 167, 013534.	2.9	13
32	Analysis and Simulation of One-Dimensional Transport Models for Lithium Symmetric Cells. Journal of the Electrochemical Society, 2019, 166, A3806-A3819.	2.9	12
33	Editorsâ€™ Choiceâ€”Perspectiveâ€”Challenges in Moving to Multiscale Battery Models: Where Electrochemistry Meets and Demands More from Math. Journal of the Electrochemical Society, 2020, 167, 133501.	2.9	12
34	Early Failure of Lithiumâ€“Sulfur Batteries at Practical Conditions: Crosstalk between Sulfur Cathode and Lithium Anode. Advanced Science, 2022, 9, e2201640.	11.2	12
35	Efficient Reformulation of Solid Phase Diffusion in Electrochemical-Mechanical Coupled Models for Lithium-Ion Batteries: Effect of Intercalation Induced Stresses. Journal of the Electrochemical Society, 2013, 160, A1675-A1683.	2.9	11
36	On the Creation of a Chess-AI-Inspired Problem-Specific Optimizer for the Pseudo Two-Dimensional Battery Model Using Neural Networks. Journal of the Electrochemical Society, 2019, 166, A886-A896.	2.9	11

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37	An Efficient Electrochemical Tanks-in-Series Model for Lithium Sulfur Batteries. Journal of the Electrochemical Society, 2020, 167, 163503.	2.9	11
38	Progress on continuum modeling of lithiumâ€“sulfur batteries. Sustainable Energy and Fuels, 2021, 5, 5946-5966.	4.9	10
39	Generic Model Control for Lithium-Ion Batteries. Journal of the Electrochemical Society, 2017, 164, A973-A986.	2.9	9
40	Fast Impedance Simulation of Lithium-Ion Batteries with Pseudo-Two Dimensional Electrochemical Models. Journal of the Electrochemical Society, 2018, 165, A1324-A1337.	2.9	9
41	Realigning the Chemistry and Parameterization of Lithiumâ€Sulfur Battery Models to Accommodate Emerging Experimental Evidence and Cell Configurations. ChemElectroChem, 2021, 8, 1098-1106.	3.4	7
42	Can a Transport Model Predict Inverse Signatures in Lithium Metal Batteries Without Modifying Kinetics?. Journal of the Electrochemical Society, 2020, 167, 160547.	2.9	7
43	Perspectiveâ€”Mass Conservation in Models for Electrodeposition/Stripping in Lithium Metal Batteries. Journal of the Electrochemical Society, 2021, 168, 092502.	2.9	6
44	An Efficient Electrochemical-Thermal Tanks-in-Series Model for Lithium-Ion Batteries. Journal of the Electrochemical Society, 2020, 167, 113506.	2.9	5
45	Estimation of Transport and Kinetic Parameters of Vanadium Redox Batteries Using Static Cells. ECS Transactions, 2018, 85, 43-64.	0.5	4
46	Towards Real-Time Simulation of Two-Dimensional Models for Electrodeposition/Stripping in Lithium-Metal Batteries. ECS Transactions, 2021, 104, 131-152.	0.5	4
47	A Tanks-in-Series Approach to Estimate Parameters for Lithium-Ion Battery Models. Journal of the Electrochemical Society, 2022, 169, 050525.	2.9	4
48	Model-based simultaneous optimization of multiple design parameters for lithium-ion batteries for maximization of energy density. , 2012, , .		2
49	Multiscale Modelling of Nanostructured Foil Anode for Next Generation Batteries. ECS Meeting Abstracts, 2021, MA2021-01, 384-384.	0.0	1
50	(Invited) The Relevance (irrelevance) and Elegance(inelegance) of Electroneutrality â€“ the Interplay between Physics and Computational Efficiency. ECS Meeting Abstracts, 2018, , .	0.0	1
51	The Importance of a Moving Boundary Approach for Modeling the SEI Layer Growth to Predict Capacity Fade. Journal of the Electrochemical Society, 2022, 169, 040548.	2.9	1
52	Orthogonal Collocation on Finite Element Method for Lid-Driven Cavity Flow. ECS Transactions, 2018, 85, 11-20.	0.5	0
53	Robust 2D Simulation of Morphological Evolution in Lithium-Metal Batteries. ECS Meeting Abstracts, 2021, MA2021-01, 985-985.	0.0	0
54	Coupled Simulation of Electric Flight Dynamics and Physics Based Battery Model for Electric Aircraft Battery Pack Sizing Analysis. ECS Meeting Abstracts, 2021, MA2021-01, 988-988.	0.0	0

#	ARTICLE	IF	CITATIONS
55	A New Modeling Approach to Simulate the SEI Layer Growth in Lithium-Ion Batteries to Predict Capacity Fade. ECS Meeting Abstracts, 2021, MA2021-01, 984-984.	0.0	0
56	Physics-Based Impedance Model of Lithium Sulfur Batteries. ECS Meeting Abstracts, 2021, MA2021-01, 983-983.	0.0	0
57	Incorporating Improved Chemical and Electrochemical Reaction Schemes in Electrochemical Engineering Models for Lithium Sulfur Batteries. ECS Meeting Abstracts, 2021, MA2021-01, 337-337.	0.0	0
58	Estimation of Grouped Parameters Using Tanks-in-Series Lithium-Ion Battery Model. ECS Meeting Abstracts, 2021, MA2021-01, 989-989.	0.0	0
59	(Industrial Electrochemistry and Electrochemical Engineering Division H. H. Dow Memorial Student) Tj ETQq1 1 0.784314 rgBT /Overlock Design, Control, and Multiscale Simulations. ECS Meeting Abstracts, 2021, MA2021-01, 987-987.	0.0	0
60	Multi-Parameter Graded Electrode Design of Lithium-Ion Batteries Using Simultaneous Optimization Approach. ECS Meeting Abstracts, 2018, , .	0.0	0
61	Estimation of Transport and Kinetic Parameters of a Solid-State Lithium Battery. ECS Meeting Abstracts, 2018, , .	0.0	0
62	Modeling the Voltage Response of Lithium Symmetric Cells. ECS Meeting Abstracts, 2018, , .	0.0	0
63	Numerical Analysis of Electrochemical Engineering Models for Lithium Sulfur Batteries. ECS Meeting Abstracts, 2018, , .	0.0	0
64	Is There Room for Theory in Data Science? Encoding Physics into Machine Learning Algorithms. ECS Meeting Abstracts, 2018, , .	0.0	0
65	Efficient Simulation of Novel Electrode Architectures. ECS Meeting Abstracts, 2018, , .	0.0	0
66	Modeling Lithium Growth in Symmetric Cells. ECS Meeting Abstracts, 2018, , .	0.0	0
67	Estimation of Transport and Kinetic Parameters of Vanadium Redox Batteries Using Static Cells. ECS Meeting Abstracts, 2018, , .	0.0	0
68	Optimal Graded Electrode Design of Lithium-Ion Batteries with Simultaneous Optimization Approach. ECS Meeting Abstracts, 2018, , .	0.0	0
69	An Analysis of Transient Impedance-like Diagnostic Signals in Batteries. ECS Meeting Abstracts, 2018, , .	0.0	0
70	(Invited) What Can Electrochemistry Learn from Chess?. ECS Meeting Abstracts, 2018, , .	0.0	0
71	Review of Capacity Fade Models for Lithium-Ion Batteries - Numerical Implications of SEI Layer Growth. ECS Meeting Abstracts, 2018, , .	0.0	0
72	Direct Estimation of Parameters from Charge-Discharge Curves of Lithium-Ion Batteries Using Pseudo-2 Dimensional (P2D) Models. ECS Meeting Abstracts, 2018, , .	0.0	0

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73	Model Based Battery Management Systems (BMS) â€“ from Theory to Practice. ECS Meeting Abstracts, 2018, , .	0.0	0
74	Real-Time Impedance Simulation of Lithium-Ion Batteries with Pseudo-Two Dimensional Electrochemical Models. ECS Meeting Abstracts, 2018, , .	0.0	0
75	Model - Based Design and Control of Lead-Acid Batteries: Is There Any More Juice Left in a System That Is 158 Years Old?. ECS Meeting Abstracts, 2018, , .	0.0	0
76	What Can Electrochemistry Learn from Chess? Using Data Science to Speed up Optimization of Electrochemical Models. ECS Meeting Abstracts, 2018, , .	0.0	0
77	A Tanks-in-Series Electrochemical Engineering Model for Lithium Sulfur Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
78	Review of Capacity Fade Models for Lithium-Ion Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
79	A Coupled Tank-in-Series Electrochemical Engineering and Thermal Model for Lithium Sulfur Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
80	(Invited) Multiscale Stress-Transport-Kinetics Continuum Models for Lithium-Metal Batteries-Relevance of Richard Alkireâ€™s Electrodeposition Legacy for Next-Generation Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
81	Electrochemical-Thermal Tanks-in-Series Models for Lithium-Ion Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
82	(Invited) Model-Based Battery Management System of Lithium-Ion Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
83	Fast Simulation of Nonlinear Electrochemical Impedance of Lithium-Ion Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
84	Nonlinear Model Predictive Control Strategies for Optimal Charging of a Lithium-Ion Battery. ECS Meeting Abstracts, 2019, , .	0.0	0
85	A Mass and Charge Conserving Tanks-in-series Model for Lithium-Ion Batteries. ECS Meeting Abstracts, 2019, , .	0.0	0
86	Power Hardware in the Loop (PHIL) Simulation of Battery Packs. ECS Meeting Abstracts, 2019, , .	0.0	0
87	Electrochemical Modeling and Simulation of a Three-Electrode Lead Acid Cell. ECS Meeting Abstracts, 2019, , .	0.0	0
88	A Model for Temperature-Dependent Degradation in Lithium-Ion Batteries: Correlating Electrochemical Phenomena with Cell-Level Performance Parameters. ECS Meeting Abstracts, 2021, MA2021-02, 419-419.	0.0	0
89	Towards Real-Time Simulation of Two-Dimensional Models for Electrodeposition/Stripping in Lithium-Metal Batteries. ECS Meeting Abstracts, 2021, MA2021-02, 176-176.	0.0	0
90	(Digital Presentation) An Efficient Modeling Framework for Electrodeposition in Lithium Metal Batteries. ECS Meeting Abstracts, 2022, MA2022-01, 1948-1948.	0.0	0

#	Article	IF	Citations
91	Optimal Charging Protocols to Restrict Lithium-Ion Battery Degradation. ECS Meeting Abstracts, 2022, MA2022-01, 429-429.	0.0	0
92	A Thermal Tanks-in-Series Model for Capacity Fade Studies in Lithium-Ion Batteries. ECS Meeting Abstracts, 2022, MA2022-01, 187-187.	0.0	0