R Edwin Garcia

List of Publications by Year
in descending order

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65 papers	2,874 citations	236925 25 h-index	168389 53 g-index
67 all docs	67 docs citations	67 times ranked	3810 citing authors

#	Article	IF	Citations
1	Tortuosity Anisotropy in Lithiumâ€ion Battery Electrodes. Advanced Energy Materials, 2014, 4, 1301278.	19.5	309
2	Heterogeneous Nucleation and Growth of Lithium Electrodeposits on Negative Electrodes. Journal of the Electrochemical Society, 2013, 160, A662-A668.	2.9	255
3	Validity of the Bruggeman relation for porous electrodes. Modelling and Simulation in Materials Science and Engineering, 2013, 21, 074009.	2.0	179
4	Electrochemomechanics of lithium dendrite growth. Energy and Environmental Science, 2019, 12, 3595-3607.	30.8	177
5	Dendrite-separator interactions in lithium-based batteries. Journal of Power Sources, 2015, 275, 912-921.	7.8	143
6	Lithium dendrite growth mechanisms in liquid electrolytes. Nano Energy, 2017, 41, 552-565.	16.0	137
7	Physically-based reduced-order capacity loss model for graphite anodes in Li-ion battery cells. Journal of Power Sources, 2017, 342, 750-761.	7.8	118
8	Phase field kinetics of lithium electrodeposits. Journal of Power Sources, 2014, 272, 581-594.	7.8	113
9	An Analytical Method to Determine Tortuosity in Rechargeable Battery Electrodes. Journal of the Electrochemical Society, 2012, 159, A548-A552.	2.9	112
10	Dislocation Filtering in GaN Nanostructures. Nano Letters, 2010, 10, 1568-1573.	9.1	110
11	Particle Size Polydispersity in Li-Ion Batteries. Journal of the Electrochemical Society, 2014, 161, A422-A430.	2.9	98
12	Image-based finite element mesh construction for material microstructures. Computational Materials Science, 2008, 43, 989-999.	3.0	92
13	High temperature deformability of ductile flash-sintered ceramics via in-situ compression. Nature Communications, 2018, 9, 2063.	12.8	87
14	Nanoscale stacking faultâ€“assisted room temperature plasticity in flash-sintered TiO ₂. Science Advances, 2019, 5, eaaw5519.	10.3	82
15	Modelling Microstructures with OOF2. International Journal of Materials and Product Technology, 2009, 35, 361.	0.2	79
16	Ostwaldâ€“Freundlich diffusion-limited dissolution kinetics of nanoparticles. Powder Technology, 2014, 257, 120-123.	4.2	45
17	The effects of external fields in ceramic sintering. Journal of the American Ceramic Society, 2019, 102, 5-31.	3.8	44
18	Stochastic failure of isotropic, brittle materials with uniform porosity. Acta Materialia, 2013, 61, 2853-2862.	7.9	35

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19	The Effect of Texture and Microstructure on the Macroscopic Properties of Polycrystalline Piezoelectrics: Application to Barium Titanate and PZN-PT. Journal of the American Ceramic Society, 2005, 88, 750-757.	3.8	34
20	Charged interfaces: electrochemical and mechanical effects. Energy and Environmental Science, 2018, 11, 1993-2000.	30.8	34
21	Virtual piezoforce microscopy of polycrystalline ferroelectric films. Journal of Applied Physics, 2006, 100, 064105.	2.5	32
22	Charged grain boundary transitions in ionic ceramics for energy applications. Npj Computational Materials, 2019, 5, .	8.7	31
23	Collective dynamics in nanostructured polycrystalline ferroelectric thin films using local time-resolved measurements and switching spectroscopy. Acta Materialia, 2010, 58, 67-75.	7.9	30
24	Deviations from Weibull statistics in brittle porous materials. Acta Materialia, 2013, 61, 7207-7215.	7.9	30
25	III-nitride nanopyramid light emitting diodes grown by organometallic vapor phase epitaxy. Journal of Applied Physics, 2010, 108, 044303.	2.5	26
26	Gibbs: Phase equilibria and symbolic computation of thermodynamic properties. Calphad: Computer Coupling of Phase Diagrams and Thermochemistry, 2010, 34, 393-404.	1.6	26
27	Physical, on the fly, capacity degradation prediction of LiNiMnCoO2-graphite cells. Journal of Power Sources, 2019, 422, 185-195.	7.8	24
28	Key microstructural characteristics in flash sintered 3YSZ critical for enhanced sintering process. Ceramics International, 2019, 45, 1251-1257.	4.8	24
29	Flash sintering incubation kinetics. Npj Computational Materials, 2020, 6, .	8.7	24
30	Microstructural effects on the average properties in porous battery electrodes. Journal of Power Sources, 2016, 309, 11-19.	7.8	23
31	The role of ceramic and glass science research in meeting societal challenges: Report from an <scp>NSF</scp>â€sponsored workshop. Journal of the American Ceramic Society, 2017, 100, 1777-1803.	3.8	23
32	Domain switching mechanisms in polycrystalline ferroelectrics with asymmetric hysteretic behavior. Journal of Applied Physics, 2009, 105, .	2.5	21
33	Correlations between the crystallographic texture and grain boundary character in polycrystalline materials. Acta Materialia, 2007, 55, 5728-5735.	7.9	20
34	Designing 3D Conical-Shaped Lithium-Ion Microelectrodes. Journal of the Electrochemical Society, 2014, 161, A302-A307.	2.9	19
35	Integrating Computational Science Tools into a Thermodynamics Course. Journal of Science Education and Technology, 2018, 27, 322-333.	3.9	16
36	Ultrahigh temperature in situ transmission electron microscopy based bicrystal coble creep in Zirconia II: Interfacial thermodynamics and transport mechanisms. Acta Materialia, 2020, 200, 1008-1021.	7.9	16

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37	Ultrahigh temperature in situ transmission electron microscopy based bicrystal coble creep in zirconia I: Nanowire growth and interfacial diffusivity. Acta Materialia, 2020, 199, 530-541.	7.9	15
38	Electrochemical drag effect on grain boundary motion in ionic ceramics. Npj Computational Materials, 2020, 6, .	8.7	15
39	Core-shell metallic alloy nanopillars-in-dielectric hybrid metamaterials with magneto-plasmonic coupling. Materials Today, 2021, 51, 39-47.	14.2	14
40	Modeling 180Â° Domain Switching Population Dynamics in Polycrystalline Ferroelectrics. Journal of the American Ceramic Society, 2012, 95, 1619-1627.	3.8	13
41	Electrochemically-driven abnormal grain growth in ionic ceramics. Acta Materialia, 2020, 200, 727-734.	7.9	12
42	Electric field-induced grain boundary degradation mechanism in yttria stabilized zirconia. Scripta Materialia, 2021, 204, 114130.	5.2	11
43	GaN nanostructure design for optimal dislocation filtering. Journal of Applied Physics, 2010, 108, 074313.	2.5	10
44	Failure Variability in Porous Glasses: Stress Interactions, Crack Orientation, and Crack Size Distributions. Journal of the American Ceramic Society, 2014, 97, 3967-3972.	3.8	10
45	Spheronization process particle kinematics determined by discrete element simulations and particle image velocimentry measurements. International Journal of Pharmaceutics, 2014, 477, 81-87.	5.2	10
46	Application of a High Throughput Bioluminescence-Based Method and Mathematical Model for the Quantitative Comparison of Polymer Microbicide Efficiency. Biomacromolecules, 2009, 10, 1173-1180.	5.4	9
47	Thermodynamically consistent variational principles for charged interfaces. Acta Materialia, 2021, 205, 116525.	7.9	9
48	Data driven analytics of porous battery microstructures. Energy and Environmental Science, 2021, 14, 2485-2493.	30.8	9
49	Finite Element Implementation of a Thermodynamic Description of Piezoelectric Microstructures. Journal of the American Ceramic Society, 2005, 88, 742-749.	3.8	8
50	Poreâ€“crack orientation effects on fracture behavior of brittle porous materials. International Journal of Fracture, 2014, 187, 293-299.	2.2	8
51	Field-assisted growth of one-dimensional ZnO nanostructures with high defect density. Nanotechnology, 2021, 32, 095603.	2.6	8
52	Modeling and optimization of polymer based bulk heterojunction (BH) solar cell. , 2009, , .		7
53	Phase coexistence near the polymorphic phase boundary. Acta Materialia, 2019, 164, 577-585.	7.9	7
54	Microstructural phase coexistence kinetics near the polymorphic phase boundary. Acta Materialia, 2021, 206, 116579.	7.9	7

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55	Modeling of flash sintering of ionic ceramics. MRS Bulletin, 2021, 46, 67-75.	3.5	5
56	Electrodes: Tortuosity Anisotropy in Lithium-Ion Battery Electrodes (Adv. Energy Mater. 5/2014). Advanced Energy Materials, 2014, 4, .	19.5	4
57	Kinetically stabilized metastable polarization states in ferroelectric ceramics. Journal of the European Ceramic Society, 2017, 37, 573-581.	5.7	4
58	Microstructural Modeling of Ferroelectric Materials: State of the Art, Challenges and Opportunities. Materials Science Forum, 2008, 606, 119-134.	0.3	2
59	Progress towards modeling microstructure evolution in polycrystalline films for solar cell applications. , 2013, , .		2
60	Sensitivity of fracture strength in porous glass. International Journal of Applied Glass Science, 2017, 8, 116-123.	2.0	2
61	Physics-based optimization of Landau parameters for ferroelectrics: application to BZTâ€“50BCT. Modelling and Simulation in Materials Science and Engineering, 2021, 29, 075001.	2.0	2
62	Microstructural Modeling of Multifunctional Material Properties: The OOF Project. , 2005, , 573-587.		1
63	Crystallographic texture optimisation in polycrystalline ferroelectric films for Random Access Memory applications. International Journal of Materials and Product Technology, 2009, 35, 293.	0.2	1
64	Apparent microstructurally induced phase separation in porous LiNi1/3Mn1/3Co1/3O2 cathodes. Journal of Power Sources, 2022, 541, 231609.	7.8	1
65	Separator Design to Suppress Dendrite Growth in Lithium-Based Batteries. ECS Meeting Abstracts, 2015, , .	0.0	0