## Ralph C Smith

List of Publications by Year in descending order

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RAIDH C SMITH

#	Article	IF	CITATIONS
1	Free energy model for hysteresis in magnetostrictive transducers. Journal of Applied Physics, 2003, 93, 458-466.	2.5	131
2	A unified framework for modeling hysteresis in ferroic materials. Journal of the Mechanics and Physics of Solids, 2006, 54, 46-85.	4.8	95
3	A Domain Wall Model for Hysteresis in Piezoelectric Materials. Journal of Intelligent Material Systems and Structures, 2000, 11, 62-79.	2.5	86
4	A Coupled Structural-Magnetic Strain and Stress Model for Magnetostrictive Transducers. Journal of Intelligent Material Systems and Structures, 2000, 11, 135-152.	2.5	78
5	Domain Wall Theory for Ferroelectric Hysteresis. Journal of Intelligent Material Systems and Structures, 1999, 10, 195-213.	2.5	71
6	The Sinc-Galerkin Method for Fourth-Order Differential Equations. SIAM Journal on Numerical Analysis, 1991, 28, 760-788.	2.3	64
7	A Domain Wall Model for Hysteresis in Piezoelectric Materials. Journal of Intelligent Material Systems and Structures, 2000, 11, 62-79.	2.5	57
8	Model-Based Robust Control Design for Magnetostrictive Transducers Operating in Hysteretic and Nonlinear Regimes. IEEE Transactions on Control Systems Technology, 2007, 15, 22-39.	5.2	49
9	A Coupled Magnetomechanical Model for Magnetostrictive Transducers and its Application to Villari-Effect Sensors. Journal of Intelligent Material Systems and Structures, 2002, 13, 737-747.	2.5	46
10	A Homogenized Energy Model for Hysteresis in Ferroelectric Materials: General Density Formulation. Journal of Intelligent Material Systems and Structures, 2005, 16, 713-732.	2.5	43
11	Adaptive Monitoring and Accommodation of Nonlinear Actuator Faults in Positive Real Infinite Dimensional Systems. IEEE Transactions on Automatic Control, 2007, 52, 2332-2338.	5.7	40
12	Nonlinear Optimal Control Techniques for Vibration Attenuation Using Magnetostrictive Actuators. Journal of Intelligent Material Systems and Structures, 2008, 19, 193-209.	2.5	38
13	Bayesian uncertainty analysis of finite deformation viscoelasticity. Mechanics of Materials, 2015, 91, 35-49.	3.2	38
14	Parameter Selection and Verification Techniques Based on Global Sensitivity Analysis Illustrated for an HIV Model. SIAM-ASA Journal on Uncertainty Quantification, 2016, 4, 266-297.	2.0	31
15	A homogenized free energy model for hysteresis in thin-film shape memory alloys. Thin Solid Films, 2005, 489, 266-290.	1.8	30
16	A Stress-dependent Hysteresis Model for Ferroelectric Materials. Journal of Intelligent Material Systems and Structures, 2007, 18, 69-88.	2.5	29
17	Adaptive techniques for the MRAC, adaptive parameter identification, and onâ€line fault monitoring and accommodation for a class of positive real infinite dimensional systems. International Journal of Adaptive Control and Signal Processing, 2009, 23, 193-215.	4.1	29
18	Uncertainty quantification of two-phase flow and boiling heat transfer simulations through a data-driven modular Bayesian approach. International Journal of Heat and Mass Transfer, 2019, 138, 1096-1116.	4.8	29

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19	Variance-based sensitivity analysis for time-dependent processes. Reliability Engineering and System Safety, 2020, 196, 106722.	8.9	29
20	Homogenized energy model for characterizing polarization and strains in hysteretic ferroelectric materials: Material properties and uniaxial model development. Journal of Intelligent Material Systems and Structures, 2012, 23, 1833-1867.	2.5	28
21	A fully Sinc-Galerkin method for Euler-Bernoulli beam models. Numerical Methods for Partial Differential Equations, 1992, 8, 171-202.	3.6	26
22	A Nonlinear Optimal Control Method for Magnetostrictive Actuators. Journal of Intelligent Material Systems and Structures, 1998, 9, 468-486.	2.5	24
23	A rate-dependent two-dimensional free energy model for ferroelectric single crystals. Continuum Mechanics and Thermodynamics, 2005, 17, 337-350.	2.2	21
24	Experimental Implementation of a Hybrid Nonlinear Control Design for Magnetostrictive Actuators. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2009, 131, .	1.6	20
25	Use of Bayesian Inference in Crystallographic Structure Refinement via Full Diffraction Profile Analysis. Scientific Reports, 2016, 6, 31625.	3.3	20
26	A homogenized energy model for the direct magnetomechanical effect. IEEE Transactions on Magnetics, 2006, 42, 1944-1957.	2.1	18
27	Monte Carlo simulation of a solvated ionic polymer with cluster morphology. Smart Materials and Structures, 2006, 15, 187-199.	3.5	18
28	The homogenized energy model for characterizing polarization and strains in hysteretic ferroelectric materials: Implementation algorithms and data-driven parameter estimation techniques. Journal of Intelligent Material Systems and Structures, 2012, 23, 1869-1894.	2.5	18
29	A modeling and uncertainty quantification framework for a flexible structure with macrofiber composite actuators operating in hysteretic regimes. Journal of Intelligent Material Systems and Structures, 2014, 25, 204-228.	2.5	17
30	An information theoretic approach to use high-fidelity codes to calibrate low-fidelity codes. Journal of Computational Physics, 2016, 324, 24-43.	3.8	17
31	Quantification of parameter uncertainty for robust control of shape memory alloy bending actuators. Smart Materials and Structures, 2013, 22, 115021.	3.5	15
32	Experimental Confirmation of a PDE-Based Approach to Design of Feedback Controls. SIAM Journal on Control and Optimization, 1997, 35, 1263-1296.	2.1	14
33	Efficient Implementation Algorithms for Homogenized Energy Models. Continuum Mechanics and Thermodynamics, 2006, 18, 137-155.	2.2	14
34	Data-driven techniques to estimate parameters in the homogenized energy model for shape memory alloys. Journal of Intelligent Material Systems and Structures, 2012, 23, 1897-1920.	2.5	14
35	Application of Rotational Isomeric State Theory to Ionic Polymer Stiffness Predictions. Journal of Materials Research, 2005, 20, 2443-2455.	2.6	13
36	Inversion algorithms for the homogenized energy model for hysteresis in ferroelectric and shape memory alloy compounds. Journal of Intelligent Material Systems and Structures, 2013, 24, 1796-1821.	2.5	13

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37	Parameter subset selection techniques for problems in mathematical biology. Biological Cybernetics, 2019, 113, 121-138.	1.3	13
38	A Temperature-dependent Constitutive Model for Relaxor Ferroelectrics. Journal of Intelligent Material Systems and Structures, 2005, 16, 433-448.	2.5	12
39	Model Development for Atomic Force Microscope Stage Mechanisms. SIAM Journal on Applied Mathematics, 2006, 66, 1998-2026.	1.8	12
40	Gradient free active subspace construction using Morris screening elementary effects. Computers and Mathematics With Applications, 2016, 72, 1603-1615.	2.7	12
41	<title>Energy formulation for Preisach models</title> . , 2002, , .		11
42	Experimental validation of a homogenized energy model for magnetic after-effects. Applied Physics Letters, 2006, 88, 122511.	3.3	11
43	A Non-linear Optimal Control Design using Narrowband Perturbation Feedback for Magnetostrictive Actuators. Journal of Intelligent Material Systems and Structures, 2010, 21, 1681-1693.	2.5	11
44	Hybrid optimization and Bayesian inference techniques for a non-smooth radiation detection problem. International Journal for Numerical Methods in Engineering, 2017, 111, 955-982.	2.8	11
45	Gradient-Free Construction of Active Subspaces for Dimension Reduction in Complex Models with Applications to Neutronics. SIAM-ASA Journal on Uncertainty Quantification, 2019, 7, 117-142.	2.0	11
46	Parameter estimation techniques for a class of nonlinear hysteresis models. Inverse Problems, 2005, 21, 1363-1377.	2.0	10
47	Optimized Design of Switching Amplifiersfor Piezoelectric Actuators. Journal of Intelligent Material Systems and Structures, 2000, 11, 887-901.	2.5	9
48	Model-based L <inf>1</inf> adaptive control of hysteresis in smart materials. , 2008, , .		9
49	Optimal Tracking Using Magnetostrictive Actuators Operating in Nonlinear and Hysteretic Regimes. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2009, 131, .	1.6	9
50	Quantification of parameter and model uncertainty for shape memory alloy bending actuators. Journal of Intelligent Material Systems and Structures, 2014, 25, 229-245.	2.5	9
51	Forecasting and Uncertainty Quantification Using a Hybrid of Mechanistic and Non-mechanistic Models for an Age-Structured Population Model. Bulletin of Mathematical Biology, 2018, 80, 1578-1595.	1.9	9
52	Radiation Source Localization Using Surrogate Models Constructed from 3-D Monte Carlo Transport Physics Simulations. Nuclear Technology, 2021, 207, 37-53.	1.2	9
53	Data-driven techniques to estimate parameters in a rate-dependent ferromagnetic hysteresis model. Physica B: Condensed Matter, 2012, 407, 1394-1398.	2.7	8
54	Comparison of Frequentist and Bayesian Confidence Analysis Methods on a Viscoelastic Stenosis Model. SIAM-ASA Journal on Uncertainty Quantification, 2013, 1, 348-369.	2.0	8

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55	Analysis of a multi-axial quantum-informed ferroelectric continuum model: Part 2—sensitivity analysis. Journal of Intelligent Material Systems and Structures, 2018, 29, 2840-2860.	2.5	8
56	A unified model for hysteresis in ferroic materials. , 2003, , .		7
57	Bayesian metropolis methods applied to sensor networks for radiation source localization. , 2016, , .		7
58	A Probabilistic Subspace Bound with Application to Active Subspaces. SIAM Journal on Matrix Analysis and Applications, 2018, 39, 1208-1220.	1.4	7
59	Sequential optimal positioning of mobile sensors using mutual information. Statistical Analysis and Data Mining, 2019, 12, 465-478.	2.8	7
60	Derivative-Based Global Sensitivity Analysis for Models with High-Dimensional Inputs and Functional Outputs. SIAM Journal of Scientific Computing, 2019, 41, A3524-A3551.	2.8	7
61	Nonlinear Perturbation Control for Magnetic Transducers. , 2006, , .		6
62	Model Development for PZT Bimorph Actuation Employed for Micro-Air Vehicles. , 2016, , .		6
63	A Unified Methodology for Modeling Hysteresis in Ferroic Materials. , 2001, , .		6
64	Model Development for the Positioning Mechanisms in an Atomic Force Microscope. , 2003, , 249-269.		6
65	Analysis and comparison of four anhysteretic polarization models for lead magnesium niobate. Journal of the Acoustical Society of America, 2000, 108, 1651-1662.	1.1	5
66	Statistical parameter estimation for macro fiber composite actuators using the homogenized energy model. , 2011, , .		5
67	Bayesian model calibration and uncertainty quantification for an HIV model using adaptive Metropolis algorithms. Inverse Problems in Science and Engineering, 2018, 26, 233-256.	1.2	5
68	Analysis of a multi-axial quantum informed ferroelectric continuum model: Part 1—uncertainty quantification. Journal of Intelligent Material Systems and Structures, 2018, 29, 2823-2839.	2.5	5
69	Optimal control of piezoceramic actuators. , 2003, 5049, 264.		4
70	Efficient implementation algorithm for a homogenized energy model with thermal relaxation. , 2005, ,		4
71	Adaptive monitoring and accommodation of nonlinear actuator faults in positive real infinite dimensional systems. , 2006, , .		4
72	Experimental Implementation of a Nonlinear Control Method for Magnetostrictive Transducers. Proceedings of the American Control Conference, 2007, , .	0.0	4

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73	L 1 adaptive control of hysteresis in smart materials. , 2008, , .		4
74	Statistical parameter estimation and uncertainty quantification for macro fiber composite actuators operating in nonlinear and hysteretic regimes. , 2011, , .		4
75	A Bayesian approach to modeling diffraction profiles and application to ferroelectric materials. Journal of Applied Crystallography, 2017, 50, 211-220.	4.5	4
76	Active subspace analysis and uncertainty quantification for a polydomain ferroelectric phase-field model. Journal of Intelligent Material Systems and Structures, 2019, 30, 2027-2051.	2.5	4
77	Application and Evaluation of Surrogate Models for Radiation Source Search. Algorithms, 2019, 12, 269.	2.1	4
78	The maximum entropy method for data fusion and uncertainty quantification in multifunctional materials and structures. Journal of Intelligent Material Systems and Structures, 2022, 33, 1182-1197.	2.5	4
79	The Sinc-Galerkin method for parameter-dependent self-adjoint problems. Applied Mathematics and Computation, 1992, 50, 175-202.	2.2	3
80	A Galerkin Method for Linear PDE Systems in Circular Geometries with Structural Acoustic Problems. SIAM Journal of Scientific Computing, 1997, 18, 371-402.	2.8	3
81	Analysis of hybrid PMN/Terfenol broadband transducers in mechanical series configuration. , 2003, , .		3
82	Design of RF MEMS switches without pull-in instability. Proceedings of SPIE, 2010, , .	0.8	3
83	High-Dimensional Model Representations for the Neutron Transport Equation. Nuclear Science and Engineering, 2014, 177, 350-360.	1.1	3
84	Automated Defect Detection in Spent Nuclear Fuel Using Combined Cerenkov Radiation and Gamma Emission Tomography Data. Nuclear Technology, 2018, 204, 343-353.	1.2	3
85	Nonlinear optimal control of plate structures using magnetostrictive actuators. , 2005, 5757, 281.		2
86	Nonlinear optimal tracking control of a piezoelectric nanopositioning stage. , 2006, , .		2
87	A reptation model for magnetic materials. , 2006, 6166, 142.		2
88	Multi-Axial Homogenized Energy Model for Ferroelectric Materials. , 2006, , 81.		2
89	Uncertainty Analysis of a Finite Deformation Viscoelastic Model. , 2014, , .		2
90	Identifiability and Active Subspace Analysis for a Polydomain Ferroelectric Phase Field Model. , 2017, , .		2

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91	A Maximum Entropy Approach for Uncertainty Quantification and Analysis of Multifunctional Materials. , 2017, , .		2
92	Uncertainty Analysis of Ferroelectric Polydomain Structures. , 2017, , .		2
93	Data-Driven Model Development and Feedback Control Design for PZT Bimorph Actuators. , 2017, , .		2
94	A Mutual Information–Based Experimental Design Framework to Use High-Fidelity Nuclear Reactor Codes to Calibrate Low-Fidelity Codes. Nuclear Technology, 2019, 205, 1685-1696.	1.2	2
95	Uncertainty Quantification and Sensitivity Analysis of Partial Charges on Macroscopic Solvent Properties in Molecular Dynamics Simulations with a Machine Learning Model. Journal of Chemical Information and Modeling, 2021, 61, 1745-1761.	5.4	2
96	A hierarchical Bayesian model for background variation in radiation source localization. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2021, 1002, 165288.	1.6	2
97	Model Input and Output Dimension Reduction Using Karhunen–LoÔve Expansions With Application to Biotransport. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering, 2019, 5, .	1.1	2
98	Density Function Optimization for the Homogenized Energy Model of Shape Memory Alloys. , 2011, , .		2
99	Development of Robust Control Algorithms for Shape Memory Alloy Bending Actuators. , 2012, , .		2
100	Global sensitivity analysis of fractional-order viscoelasticity models. , 2019, , .		2
101	A Unified Model for Hysteresis in Ferroic Materials. Materials Research Society Symposia Proceedings, 2004, 855, 141.	0.1	1
102	A ferroelastic switching model for lead zirconate-titanate (PZT). , 2005, , .		1
103	A Stress-Dependent Hysteresis Model for Ferromagnetic Transducer Materials. , 2005, , 175.		1
104	Efficient inverse compensation for hysteresis via homogenized energy models. , 2007, , .		1
105	Open loop nonlinear optimal tracking control of a magnetostrictive terfenol-D actuator. , 2007, , .		1
106	High-speed parameter estimation algorithms for nonlinear smart materials. , 2007, , .		1
107	Inverse model construction for control implementation of macro fiber composite actuators operating in hysteretic regimes. Proceedings of SPIE, 2010, , .	0.8	1
108	Sliding Mode Control for Inverse Compensated Hysteretic Smart Systems. , 2012, , .		1

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109	Modeling and Bayesian parameter estimation for shape memory alloy bending actuators. , 2012, , .		1
110	Quantifying Plant Age and Available Water Effects on Soybean Leaf Conductance. Agronomy Journal, 2013, 105, 28-36.	1.8	1
111	Data-Driven Design of Sliding Mode Controllers for Ferroelectric Actuators. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 1053-1058.	0.4	1
112	Surrogate model development and feedforward control implementation for PZT bimorph actuators employed for robobee. , 2017, , .		1
113	Uncertainty analysis of continuum phase field modeling in 180° degree domain wall structures. , 2017, ,		1
114	Bayesian model calibration on active subspaces. , 2017, , .		1
115	Numerical Techniques to Model Fractional-Order Nonlinear Viscoelasticity in Soft Elastomers. , 2018, , .		1
116	Surrogate-Based Robust Design for a Non-Smooth Radiation Source Detection Problem. Algorithms, 2019, 12, 113.	2.1	1
117	Bayesian inference and uncertainty propagation using efficient fractional-order viscoelastic models for dielectric elastomers. Journal of Intelligent Material Systems and Structures, 2021, 32, 486-496.	2.5	1
118	Modeling and Parameter Subset Selection for Fibrin Polymerization Kinetics with Applications to Wound Healing. Bulletin of Mathematical Biology, 2021, 83, 47.	1.9	1
119	Nonlinear Open Loop Optimal Tracking Using Magnetostrictive Transducers. , 2005, , .		1
120	Parameter-dependent surrogate model development for PZT bimorph actuators employed for micro-air vehicles. , 2019, , .		1
121	A PARAMETER SUBSET SELECTION ALGORITHM FOR MIXED-EFFECTS MODELS. , 2016, 6, 405-416.		1
122	The Homogenized Energy Model for Characterizing Magnetization and Strains in Ferromagnetic Materials. , 2012, , .		1
123	Uncertainty quantification for PZT bimorph actuators. , 2018, , .		1
124	Active subspace uncertainty quantification for a polydomain ferroelectric phase-field model. , 2018, , .		1
125	Parameter estimation techniques for a polarization hysteresis model. , 2004, , .		0
126	A Stress-Dependent Hysteresis Model for PZT. Materials Research Society Symposia Proceedings, 2005, 881, 1.	0.1	0

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127	High speed inverse model implementation for real-time control of ferroelectric and ferromagnetic transducers operating in nonlinear and hysteretic regimes. , 2007, , .		0
128	Adaptive control design for hysteretic smart systems. , 2009, , .		0
129	Proper orthogonal decomposition with updates for efficient control design in smart material systems. , 2010, , .		0
130	A Strain Model for Piezoelectric Materials Operating in Highly Hysteretic Regimes. , 2011, , .		0
131	Adaptive control design for hysteretic smart systems. , 2011, , .		0
132	Sliding mode control design for hysteretic ferroelectric materials. , 2012, , .		0
133	Sliding mode control based on an inverse compensator design for hysteretic smart systems. , 2012, , .		0
134	Uncertainty Quantification for Robust Control Design of Smart Material Systems. , 2013, , .		0
135	Bayesian Techniques to Quantify Parameter and Model Uncertainty for a Macro-Fiber Composite Model. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2013, 46, 67-72.	0.4	0
136	Model Calibration for Beam Models in the Presence of Model Discrepancy. , 2014, , .		0
137	Frequentist and Bayesian Lasso Techniques for Parameter Selection in Nonlinearly Parameterized Models**This research was supported in part by the Department of Energy National Nuclear Security Administration (NNSA) through the Consortium for Nonproliferation Enabling Capabilities (CNEC) ParameternEstimationConPredictive Signalation of Parameteria with Model Discrepancy**This	0.9	Ο
138	research was supported in part by the Air Force Office of Scientific Research grant AFOSR FA9550-11-1-0152. It was also supported by the Consortium for Advanced Simulation of Light Water Reactors (http://www.casl.gov), an Energy Innovation Hub, (http://www.energy.gov/hubs) for Modeling and Simulation of Nuclear Reactors under U.S. Department of Energy Contract No.	0.9	0
139	DE-AC05-00OR22725 IFAC-PapersOnLine, 2016, 49, 428-433. Uncertainty analysis of continuum scale ferroelectric energy landscapes using density functional theory. , 2016, , .		Ο
140	Adaptive and active materials: selected papers from the ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS 15) (Colorado Springs, CO, USA, 21–23 September) Tj E	.TQ&46000	rg <b>B</b> JT /Overloc
141	Global sensitivity analysis for a quantum informed ferroelectric phase field model. Proceedings of SPIE, 2017, , .	0.8	Ο
142	A Linear Regression Framework for the Verification of Bayesian Model Calibration Algorithms. Journal of Verification, Validation and Uncertainty Quantification, 2017, 2, .	0.4	0
143	A Multi-Axial Electromechanically-Coupled Homogenized Energy Model for Ferroelectric Materials. , 2017, , .		0
144	Bayesian Approaches to Uncertainty Quantification and Structure Refinement from X-Ray Diffraction. Springer Series in Materials Science, 2018, , 81-102.	0.6	0

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145	SURROGATE BASED MUTUAL INFORMATION APPROXIMATION AND OPTIMIZATION FOR URBAN SOURCE LOCALIZATION. , 2021, 11, 39-55.		0
146	Application of Monte Carlo Simulations to Hydrated Nafion Stiffness Predictions. , 2005, , .		0
147	Construction of Bayesian Prediction Intervals for Smart Systems. , 2013, , .		0
148	Uncertainty-enabled design of electromagnetic reflectors with integrated shape control. , 2018, , .		0
149	The use of Bayesian inference in the characterization of materials and thin films. Acta Crystallographica Section A: Foundations and Advances, 2019, 75, a209-a209.	0.1	0
150	Algorithms in Diffraction Profile Analysis. , 2020, , 501-539.		0