

Petr Sedlak

List of Publications by Year in descending order

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107
papers

2,339
citations

236925

25
h-index

243625

44
g-index

107
all docs

107
docs citations

107
times ranked

1625
citing authors

#	ARTICLE	IF	CITATIONS
1	Grain-resolved analysis of localized deformation in nickel-titanium wire under tensile load. <i>Science</i> , 2016, 353, 559-562.	12.6	154
2	Thermomechanical model for NiTi-based shape memory alloys including R-phase and material anisotropy under multi-axial loadings. <i>International Journal of Plasticity</i> , 2012, 39, 132-151.	8.8	153
3	On the coupling between martensitic transformation and plasticity in NiTi: Experiments and continuum based modelling. <i>Progress in Materials Science</i> , 2018, 98, 249-298.	32.8	125
4	Elastic constants of bcc austenite and 2H orthorhombic martensite in CuAlNi shape memory alloy. <i>Acta Materialia</i> , 2005, 53, 3643-3661.	7.9	108
5	Unravelling the multi-scale structure-property relationship of laser powder bed fusion processed and heat-treated AlSi10Mg. <i>Scientific Reports</i> , 2021, 11, 6423.	3.3	95
6	Determination of All 21 Independent Elastic Coefficients of Generally Anisotropic Solids by Resonant Ultrasound Spectroscopy: Benchmark Examples. <i>Experimental Mechanics</i> , 2014, 54, 1073-1085.	2.0	90
7	Beyond the strain recoverability of martensitic transformation in NiTi. <i>International Journal of Plasticity</i> , 2019, 116, 232-264.	8.8	89
8	Residual stress analysis of additive manufacturing of metallic parts using ultrasonic waves: State of the art review. <i>Journal of Materials Research and Technology</i> , 2020, 9, 9457-9477.	5.8	85
9	On the plastic deformation accompanying cyclic martensitic transformation in thermomechanically loaded NiTi. <i>International Journal of Plasticity</i> , 2018, 111, 53-71.	8.8	75
10	Modal resonant ultrasound spectroscopy for ferroelastics. <i>Applied Physics A: Materials Science and Processing</i> , 2009, 96, 557-567.	2.3	55
11	Influence of grain morphology on ultrasonic wave attenuation in polycrystalline media with statistically equiaxed grains. <i>Journal of the Acoustical Society of America</i> , 2018, 143, 219-229.	1.1	48
12	The effect of athermal and isothermal β phase particles on elasticity of β -Ti single crystals. <i>Acta Materialia</i> , 2016, 110, 185-191.	7.9	46
13	Evolution of macroscopic elastic moduli of martensitic polycrystalline NiTi and NiTiCu shape memory alloys with pseudoplastic straining. <i>Acta Materialia</i> , 2017, 123, 146-156.	7.9	46
14	Application of ultrasonic methods to determine elastic anisotropy of polycrystalline copper processed by equal-channel angular pressing. <i>Acta Materialia</i> , 2010, 58, 235-247.	7.9	44
15	Young's moduli of sputter-deposited NiTi films determined by resonant ultrasound spectroscopy: Austenite, R-phase, and martensite. <i>Scripta Materialia</i> , 2015, 101, 24-27.	5.2	41
16	Anisotropic elastic moduli and internal friction of graphene nanoplatelets/silicon nitride composites. <i>Composites Science and Technology</i> , 2013, 75, 93-97.	7.8	40
17	Elastic properties of silicon nitride ceramics reinforced with graphene nanofillers. <i>Materials and Design</i> , 2015, 87, 675-680.	7.0	37
18	Temperature dependence of elastic properties in austenite and martensite of Ni-Mn-Ga epitaxial films. <i>Acta Materialia</i> , 2018, 145, 298-305.	7.9	37

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19	Thermomechanical model for NiTi-based shape memory alloys covering macroscopic localization of martensitic transformation. <i>International Journal of Solids and Structures</i> , 2021, 221, 117-129.	2.7	36
20	In situ experimental evidence on R-phase related deformation processes in activated NiTi wires. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2006, 438-440, 579-584.	5.6	30
21	Combined effect of structural softening and magneto-elastic coupling on elastic coefficients of Ni Mn Ga austenite. <i>Journal of Alloys and Compounds</i> , 2013, 577, S131-S135.	5.5	30
22	Elastic moduli and elastic anisotropy of cold sprayed metallic coatings. <i>Surface and Coatings Technology</i> , 2016, 291, 342-347.	4.8	30
23	A microscopically motivated constitutive model for shape memory alloys: Formulation, analysis and computations. <i>Mathematics and Mechanics of Solids</i> , 2016, 21, 358-382.	2.4	28
24	Simulations of Mechanical Response of Superelastic NiTi Helical Spring and its Relation to Fatigue Resistance. <i>Journal of Materials Engineering and Performance</i> , 2014, 23, 2591-2598.	2.5	27
25	Ultrasonic bandgaps in 3D-printed periodic ceramic microlattices. <i>Ultrasonics</i> , 2018, 82, 91-100.	3.9	27
26	Microstructure, martensitic transformation and anomalies in σ^2 -softening in Co-Ni-Al ferromagnetic shape memory alloys. <i>Acta Materialia</i> , 2013, 61, 5869-5876.	7.9	26
27	The effect of antiphase boundaries on the elastic properties of Ni-Mn-Ga austenite and premartensite. <i>Journal of Physics Condensed Matter</i> , 2013, 25, 425402.	1.8	25
28	Shape recovery mechanism observed in single crystals of Cu-Al-Ni shape memory alloy. <i>Phase Transitions</i> , 2008, 81, 537-551.	1.3	24
29	Forward and inverse problems for surface acoustic waves in anisotropic media: A Ritz-Rayleigh method based approach. <i>Ultrasonics</i> , 2015, 56, 381-389.	3.9	21
30	Anomalous lattice softening of Ni ₂ MnGa austenite due to magnetoelastic coupling. <i>Journal of Applied Physics</i> , 2012, 111, .	2.5	20
31	Modeling of mechanical response of NiTi shape memory alloy subjected to combined thermal and non-proportional mechanical loading: a case study on helical spring actuator. <i>Journal of Intelligent Material Systems and Structures</i> , 2016, 27, 1927-1938.	2.5	20
32	Elastic constants of β -Ti ₁₅ Mo. <i>Journal of Alloys and Compounds</i> , 2019, 792, 960-967.	5.5	20
33	Acoustic characterization of the elastic properties of austenite phase and martensitic transformations in CuAlNi shape memory alloy. <i>Journal of Alloys and Compounds</i> , 2004, 378, 140-144.	5.5	19
34	Temperature dependence of elastic properties of cubic and orthorhombic phases in Cu-Al-Ni shape memory alloy near their stability limits. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2007, 462, 320-324.	5.6	19
35	Evolution of soft-phonon modes in Fe-Pd shape memory alloy under large elastic-like strains. <i>Acta Materialia</i> , 2016, 105, 182-188.	7.9	19
36	Application of resonant ultrasound spectroscopy to determine elastic constants of plasma-sprayed coatings with high internal friction. <i>Surface and Coatings Technology</i> , 2013, 232, 747-757.	4.8	18

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37	Elastic constants of non-modulated Ni-Mn-Ga martensite. <i>Scripta Materialia</i> , 2017, 136, 20-23.	5.2	18
38	Laser-Ultrasonic Characterization of Strongly Anisotropic Materials by Transient Grating Spectroscopy. <i>Experimental Mechanics</i> , 2021, 61, 663-676.	2.0	18
39	Evolution of elastic constants of the NiTi shape memory alloy during a stress-induced martensitic transformation. <i>Acta Materialia</i> , 2021, 208, 116718.	7.9	18
40	Ultrasonic characterization of Cu-Al-Ni single crystals lattice stability in the vicinity of the phase transition. <i>Ultrasonics</i> , 2004, 42, 519-526.	3.9	17
41	Simulations of Self-Expanding Braided Stent Using Macroscopic Model of NiTi Shape Memory Alloys Covering R-Phase. <i>Journal of Materials Engineering and Performance</i> , 2014, 23, 2584-2590.	2.5	17
42	<i>In situ</i> characterization of local elastic properties of thin shape memory films by surface acoustic waves. <i>Smart Materials and Structures</i> , 2016, 25, 127002.	3.5	17
43	Linearized forward and inverse problems of the resonant ultrasound spectroscopy for the evaluation of thin surface layers. <i>Journal of the Acoustical Society of America</i> , 2010, 128, 3426-3437.	1.1	16
44	Thermomechanical model for NiTi shape memory wires. <i>Smart Materials and Structures</i> , 2010, 19, 094010.	3.5	16
45	Velcro-like fasteners based on NiTi micro-hook arrays. <i>Smart Materials and Structures</i> , 2011, 20, 085027.	3.5	16
46	Sensitivity of the resonant ultrasound spectroscopy to weak gradients of elastic properties. <i>Journal of the Acoustical Society of America</i> , 2012, 131, 3775-3785.	1.1	16
47	Anisotropic elasticity of DyScO ₃ substrates. <i>Journal of Physics Condensed Matter</i> , 2012, 24, 385404.	1.8	16
48	Magneto-elastic attenuation in austenitic phase of Ni-Mn-Ga alloy investigated by ultrasonic methods. <i>Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2009, 521-522, 205-208.	5.6	15
49	Acoustic metamaterial behavior of three-dimensional periodic architectures assembled by robocasting. <i>Applied Physics Letters</i> , 2014, 105, 211904.	3.3	14
50	B2 Martensitic Transformation as a Mechanism of Plastic Deformation of NiTi Shape Memory and Superelasticity, 2019, 5, 383-396.	2.2	14
51	Effect of the High-Pressure Torsion (HPT) and Subsequent Isothermal Annealing on the Phase Transformation in Biomedical Ti15Mo Alloy. <i>Metals</i> , 2019, 9, 1194.	2.3	14
52	Experimentally validated constitutive model for NiTi-based shape memory alloys featuring intermediate R-phase transformation: A case study of Ni ₄₈ Ti ₄₉ Fe ₃ . <i>Materials and Design</i> , 2021, 203, 109593.	7.0	14
53	Resonant ultrasound spectroscopy – a tool to probe magneto-elastic properties of ferromagnetic shape memory alloys. <i>European Physical Journal B</i> , 2013, 86, 1.	1.5	13
54	An ultrasonic internal friction study of ultrafine-grained AZ31 magnesium alloy. <i>Journal of Materials Science</i> , 2015, 50, 808-818.	3.7	13

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55	Corrosion of NiTi Wires with Cracked Oxide Layer. Journal of Materials Engineering and Performance, 2014, 23, 2659-2668.	2.5	12
56	On the complementarity between resistivity measurement and ultrasonic measurement for in-situ characterization of phase transitions in Ti-alloys. Journal of Alloys and Compounds, 2018, 762, 868-872.	5.5	12
57	Effect of electron localization in theoretical design of Ni-Mn-Ga based magnetic shape memory alloys. Materials and Design, 2021, 209, 109917.	7.0	12
58	Switching the soft shearing mode orientation in Ni-Mn-Ga non-modulated martensite by Co and Cu doping. Smart Materials and Structures, 2020, 29, 045022.	3.5	12
59	Characterization of Superelastic NiTi Alloys by Nanoindentation: Experiments and Simulations. Acta Physica Polonica A, 2015, 128, 664-669.	0.5	12
60	Softening of Shear Elastic Coefficients in Shape Memory Alloys Near the Martensitic Transition: A Study by Laser-Based Resonant Ultrasound Spectroscopy. Metals, 2020, 10, 1383.	2.3	10
61	Characterization of bonding quality of a cold-sprayed deposit by laser resonant ultrasound spectroscopy. Ultrasonics, 2020, 106, 106140.	3.9	10
62	Application of the Ritz-Rayleigh method for Lamb waves in extremely anisotropic media. Wave Motion, 2020, 96, 102567.	2.0	10
63	On the evaluation of temperature dependence of elastic constants of martensitic phases in shape memory alloys from resonant ultrasound spectroscopy studies. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2008, 481-482, 567-573.	5.6	9
64	Quasistatic and dynamic functional properties of thin superelastic NiTi wires. European Physical Journal: Special Topics, 2008, 158, 7-14.	2.6	9
65	Physical Simulation of the Random Failure of Implanted Braided NiTi Stents. Journal of Materials Engineering and Performance, 2014, 23, 2650-2658.	2.5	9
66	Incommensurateness in nanotwinning models of modulated martensites. Physical Review B, 2015, 92, .	3.2	9
67	Elasticity and internal friction of magnesium alloys at room and elevated temperatures. Journal of Materials Science, 2018, 53, 8545-8553.	3.7	9
68	SMA Constitutive Modeling Backed Up by 3D-XRD Experiments: Transformation Front in Stretched NiTi Wire. Shape Memory and Superelasticity, 2018, 4, 411-416.	2.2	9
69	Experimental and computational study on phase transformations in superelastic NiTi snake-like spring. Smart Materials and Structures, 2018, 27, 095005.	3.5	9
70	Ab Initio Study of Martensitic Transition in Ni ₂ MnGa. Acta Physica Polonica A, 2018, 134, 804-806.	0.5	9
71	Frequency-dependent acoustic energy focusing in hexagonal ceramic micro-scaffolds. Wave Motion, 2020, 92, 102417.	2.0	7
72	Reconstruction of phase distributions in NiTi helical spring: comparison of diffraction/scattering computed tomography and computational modeling. Smart Materials and Structures, 2020, 29, 075036.	3.5	7

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73	Shape Memory Hooks Employed in Fasteners. <i>Journal of Materials Engineering and Performance</i> , 2009, 18, 706-710.	2.5	6
74	Electrochemistry of NiTi Wires/Springs Subjected to Static/Cyclic Loadings. <i>Materials Today: Proceedings</i> , 2015, 2, S965-S969.	1.8	6
75	Evolution of Elastic Properties of Cold Sprayed Metal Coatings at Elevated Temperatures. <i>Acta Physica Polonica A</i> , 2018, 134, 794-798.	0.5	6
76	Elastic constants of nanoporous III-V semiconductors. <i>Journal Physics D: Applied Physics</i> , 2015, 48, 245102.	2.8	5
77	Non-linear elastic behavior of Ni-Fe-Ga(Co) shape memory alloy and Landau-energy landscape reconstruction. <i>Acta Materialia</i> , 2021, 224, 117530.	7.9	5
78	Experimental Observations versus First-Principles Calculations for Ni-Mn-Ga Ferromagnetic Shape Memory Alloys: A Review. <i>Physica Status Solidi - Rapid Research Letters</i> , 2022, 16, .	2.4	5
79	Finite Elements Modeling of Mechanical and Acoustic Properties of a Ceramic Metamaterial Assembled by Robocasting. <i>Applied Mechanics and Materials</i> , 0, 821, 364-371.	0.2	4
80	Large Non-ergodic Magnetoelastic Damping in Ni-Mn-Ga Austenite. <i>Shape Memory and Superelasticity</i> , 2020, 6, 89-96.	2.2	4
81	Numerical Simulations of NiTi Shape Memory Alloy Wire Behaviors in Tension, Compression, and Torsion. <i>Acta Physica Polonica A</i> , 2018, 134, 842-846.	0.5	4
82	Experimental Observations and Modeling of Localization in Superelastic NiTi Polycrystalline Alloys: State of the Art. <i>Acta Physica Polonica A</i> , 2018, 134, 847-852.	0.5	4
83	An experimentally-fitted thermodynamical constitutive model for polycrystalline shape memory alloys. <i>Discrete and Continuous Dynamical Systems - Series S</i> , 2021, 14, 3925.	1.1	3
84	Transient Grating Spectroscopy for Complete Elastic Anisotropy: Beyond the Measurement of Surface Acoustic Waves. , 2021, , .		3
85	Thermomechanical properties of single crystals evaluated by impulsive stimulated thermal scattering technique. <i>Journal of Physics: Conference Series</i> , 2011, 278, 012023.	0.4	2
86	Numerical Study on Localization of Phase Transformation in NiTi Shape Memory Wires. <i>Solid State Phenomena</i> , 0, 258, 141-144.	0.3	2
87	Ceramic phononic crystals with MHz-range frequency band gaps. <i>Proceedings of Meetings on Acoustics</i> , 2017, , .	0.3	2
88	Anisotropic Elasticity of Ceramic Micro-Scaffolds Fabricated by Robocasting. <i>Acta Physica Polonica A</i> , 2018, 134, 799-803.	0.5	2
89	Resonant ultrasound spectroscopy for investigation of thin surface coatings. <i>WIT Transactions on Engineering Sciences</i> , 2009, , .	0.0	2
90	Molecular Dynamics Simulations of Poly(dimethylsiloxane) Properties. <i>Acta Physica Polonica A</i> , 2015, 128, 637-640.	0.5	2

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91	Elastic Properties of Structural Phases in Shape Memory Alloys Investigated by Resonant Ultrasound Spectroscopy. <i>Materials Science Forum</i> , 2005, 482, 351-354.	0.3	1
92	Internal stresses in steel plate generated by shape memory alloy inserts. <i>Acta Materialia</i> , 2012, 60, 1378-1394.	7.9	1
93	Simulation of Mechanical Behavior of NiTi Shape Memory Alloys Under Complex Loading: Model Formulation and its Performance in Applications. , 2014, , .		1
94	<i>In Situ&/i> Detection of Surface Micro-Cracking in Ultrafine-Grained AZ31 Magnesium Alloy by Resonant Ultrasound Spectroscopy. <i>Key Engineering Materials</i> , 0, 606, 87-90.	0.4	1
95	Two-Dimensional Thermomechanical Model for Combined Loading of NiTi Wire Structures. , 2009, , .		1
96	Non-Contact Characterization of Acoustoelastic Parameters of Advanced Materials by Laser-Ultrasound. <i>Acta Physica Polonica A</i> , 2018, 134, 807-810.	0.5	1
97	Elastic Properties of Structural Phases in Shape Memory Alloys Investigated by Resonant Ultrasound Spectroscopy. <i>Materials Science Forum</i> , 0, , 351-354.	0.3	1
98	PS-17 Improvement of the Inversion Procedure in Resonant Ultrasound Spectroscopy for Generally Oriented, High Anisotropic Crystals. , 2006, , .		0
99	Novel approach to material evaluation of thin surface layers by resonant ultrasound spectroscopy. <i>Journal of Physics: Conference Series</i> , 2010, 214, 012045.	0.4	0
100	Thermomechanical Models for NiTi Shape Memory Alloys and Their Applications. , 2010, , .		0
101	Determination of elastic properties of surface layers and coatings by resonant ultrasound spectroscopy. <i>Journal of Physics: Conference Series</i> , 2011, 278, 012004.	0.4	0
102	Editorial: SMST 2013. <i>Journal of Materials Engineering and Performance</i> , 2014, 23, 2301-2302.	2.5	0
103	Xenon Focused Ion Beam in the Shape Memory Alloys Investigation - The Case of NiTi and CoNiAl. <i>Microscopy and Microanalysis</i> , 2014, 20, 334-335.	0.4	0
104	Application of Laser-Ultrasound for Characterization of Plasma-Sprayed Ceramics. <i>Defect and Diffusion Forum</i> , 2016, 368, 69-72.	0.4	0
105	Ultrasonic Characterization of Nanoparticle-Based Ceramics Fabricated by Spark-Plasma Sintering. <i>Ceramics</i> , 2021, 4, 135-147.	2.6	0
106	Fastening of shape memory hook arrays. , 2009, , .		0
107	In Situ&/em> Characterization of the Elasticity and Stress-Induced Phase Transformation of NiTi Shape-Memory Alloy. <i>Acta Physica Polonica A</i> , 2018, 134, 811-814.	0.5	0