

# Joost J Vlassak

## List of Publications by Year in descending order

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118  
papers

13,650  
citations

44069

48  
h-index

20961

115  
g-index

120  
all docs

120  
docs citations

120  
times ranked

15038  
citing authors

#	ARTICLE	IF	CITATIONS
1	Electrical resistivity as a descriptor for classification of amorphous versus crystalline phases of alloys. <i>Acta Materialia</i> , 2022, 231, 117861.	7.9	15
2	Reprint of: Nanocalorimetry: Door opened for in situ material characterization under extreme non-equilibrium conditions. <i>Progress in Materials Science</i> , 2021, 120, 100819.	32.8	1
3	A Micromachined Picocalorimeter Sensor for Liquid Samples with Application to Chemical Reactions and Biochemistry. <i>Advanced Science</i> , 2021, 8, 2003415.	11.2	11
4	Nanocalorimetry and ab initio study of ternary elements in CuZr-based shape memory alloy. <i>Acta Materialia</i> , 2020, 182, 29-38.	7.9	9
5	Measurement of the stress-strain behavior of freestanding ultra-thin films. <i>Materialia</i> , 2020, 9, 100502.	2.7	5
6	Explosive martensitic transformation of supercooled austenite in CuZr-based thin-film shape memory alloys. <i>Acta Materialia</i> , 2020, 200, 162-170.	7.9	4
7	Ultra-sensitive and resilient compliant strain gauges for soft machines. <i>Nature</i> , 2020, 587, 219-224.	27.8	279
8	Chemically Coupled Interfacial Adhesion in Multimaterial Printing of Hydrogels and Elastomers. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12, 31002-31009.	8.0	22
9	Lightweight Highly Tunable Jamming-Based Composites. <i>Soft Robotics</i> , 2020, 7, 724-735.	8.0	32
10	Residual stress-driven test technique for freestanding ultrathin films: Elastic behavior and residual strain. <i>Journal of Materials Research</i> , 2019, 34, 3474-3482.	2.6	8
11	Design Molecular Topology for Wet-Dry Adhesion. <i>ACS Applied Materials &amp; Interfaces</i> , 2019, 11, 24802-24811.	8.0	76
12	Temperature-resistance sensor arrays for combinatorial study of phase transitions in shape memory alloys and metallic glasses. <i>Scripta Materialia</i> , 2019, 168, 144-148.	5.2	6
13	Nanocalorimetry: Door opened for in situ material characterization under extreme non-equilibrium conditions. <i>Progress in Materials Science</i> , 2019, 104, 53-137.	32.8	44
14	Diffusion kinetics in binary CuZr and NiZr alloys in the super-cooled liquid and glass states studied by nanocalorimetry. <i>Scripta Materialia</i> , 2019, 165, 73-77.	5.2	14
15	Mechanically Versatile Soft Machines through Laminar Jamming. <i>Advanced Functional Materials</i> , 2018, 28, 1707136.	14.9	159
16	Dislocation evolution during plastic deformation: Equations vs. discrete dislocation dynamics study. <i>Journal of Applied Physics</i> , 2018, 123, .	2.5	49
17	A Soft Stretchable Sensor: Towards Peripheral Nerve Signal Sensing. <i>MRS Advances</i> , 2018, 3, 1597-1602.	0.9	4
18	Transforming the Dynamic Response of Robotic Structures and Systems Through Laminar Jamming. <i>IEEE Robotics and Automation Letters</i> , 2018, 3, 688-695.	5.1	42

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19	Adhesion between Hydrophobic Elastomer and Hydrogel through Hydrophilic Modification and Interfacial Segregation. <i>ACS Applied Materials &amp; Interfaces</i> , 2018, 10, 43252-43261.	8.0	38
20	Nanomechanical characterization of K-basalt from Roman comagmatic province: A preliminary study. <i>AIP Conference Proceedings</i> , 2018, , .	0.4	0
21	Hydrogel bowls for cleaning oil spills on water. <i>Water Research</i> , 2018, 145, 640-649.	11.3	28
22	Combinatorial temperature resistance sensors for the analysis of phase transformations demonstrated for metallic glasses. <i>Acta Materialia</i> , 2018, 156, 486-495.	7.9	11
23	Highly Stretchable and Tough Hydrogels below Water Freezing Temperature. <i>Advanced Materials</i> , 2018, 30, e1801541.	21.0	444
24	Phase transformations in equiatomic CuZr shape memory thin films analyzed by differential nanocalorimetry. <i>Acta Materialia</i> , 2018, 159, 320-331.	7.9	15
25	3D Printing of Transparent and Conductive Heterogeneous Hydrogel-Elastomer Systems. <i>Advanced Materials</i> , 2017, 29, 1604827.	21.0	364
26	Determination of critical cooling rates in metallic glass forming alloy libraries through laser spike annealing. <i>Scientific Reports</i> , 2017, 7, 7155.	3.3	49
27	Instrumented cardiac microphysiological devices via multimaterial three-dimensional printing. <i>Nature Materials</i> , 2017, 16, 303-308.	27.5	652
28	Fatigue fracture of hydrogels. <i>Extreme Mechanics Letters</i> , 2017, 10, 24-31.	4.1	151
29	Scanning AC Nanocalorimetry and Its Applications. , 2016, , 205-235.		0
30	High tensile strength of sputter-deposited ZrB <sub>2</sub> ceramic thin films measured up to 1016 ÅK. <i>Acta Materialia</i> , 2016, 113, 32-40.	7.9	24
31	First-Principles Analysis on the Catalytic Role of Additives in Low-Temperature Synthesis of Transition Metal Diborides Using Nanolaminates. <i>ACS Applied Materials &amp; Interfaces</i> , 2016, 8, 10995-11000.	8.0	6
32	Crystallization behavior upon heating and cooling in Cu <sub>50</sub> Zr <sub>50</sub> metallic glass thin films. <i>Acta Materialia</i> , 2016, 121, 68-77.	7.9	64
33	Spectral descriptors for bulk metallic glasses based on the thermodynamics of competing crystalline phases. <i>Nature Communications</i> , 2016, 7, 12315.	12.8	104
34	Extremely Stretchable and Fast Self-Healing Hydrogels. <i>Advanced Materials</i> , 2016, 28, 4678-4683.	21.0	394
35	Measurements of stress and fracture in germanium electrodes of lithium-ion batteries during electrochemical lithiation and delithiation. <i>Journal of Power Sources</i> , 2016, 304, 164-169.	7.8	57
36	Fire-Resistant Hydrogel-Fabric Laminates: A Simple Concept That May Save Lives. <i>ACS Applied Materials &amp; Interfaces</i> , 2016, 8, 2071-2077.	8.0	69

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37	Adhesion between highly stretchable materials. <i>Soft Matter</i> , 2016, 12, 1093-1099.	2.7	93
38	Kinetic Role of Carbon in Solid-State Synthesis of Zirconium Diboride using Nanolaminates: Nanocalorimetry Experiments and First-Principles Calculations. <i>Nano Letters</i> , 2015, 15, 8266-8270.	9.1	13
39	Application of in-situ nano-scanning calorimetry and X-ray diffraction to characterize Ni-Ti-Hf high-temperature shape memory alloys. <i>Thermochimica Acta</i> , 2015, 603, 53-62.	2.7	22
40	Thickness and film stress effects on the martensitic transformation temperature in equi-atomic NiTi thin films. <i>Mechanics of Materials</i> , 2015, 88, 50-60.	3.2	18
41	First-Principles Theoretical Studies and Nanocalorimetry Experiments on Solid-State Alloying of Zr-B. <i>Nano Letters</i> , 2015, 15, 6553-6558.	9.1	26
42	A simple technique for measuring the fracture energy of lithiated thin-film silicon electrodes at various lithium concentrations. <i>Journal of Power Sources</i> , 2015, 294, 159-166.	7.8	32
43	Nucleation behavior of melted Bi films at cooling rates from 101 to 104K/s studied by combining scanning AC and DC nano-calorimetry techniques. <i>Thermochimica Acta</i> , 2015, 603, 29-38.	2.7	12
44	Kinetics of solid-gas reactions characterized by scanning AC nano-calorimetry with application to Zr oxidation. <i>Applied Physics Letters</i> , 2014, 105, .	3.3	15
45	Microstructural evolution induced by micro-cracking during fast lithiation of single-crystalline silicon. <i>Journal of Power Sources</i> , 2014, 265, 160-165.	7.8	38
46	A model of ideal elastomeric gels for polyelectrolyte gels. <i>Soft Matter</i> , 2014, 10, 2582.	2.7	72
47	High-temperature tensile behavior of freestanding Au thin films. <i>Scripta Materialia</i> , 2014, 75, 34-37.	5.2	32
48	Stiff, strong, and tough hydrogels with good chemical stability. <i>Journal of Materials Chemistry B</i> , 2014, 2, 6708-6713.	5.8	302
49	Low-Temperature Synthesis of Ultra-High-Temperature Coatings of ZrB <sub>2</sub> Using Reactive Multilayers. <i>Journal of Physical Chemistry C</i> , 2014, 118, 21192-21198.	3.1	41
50	Variation of stress with charging rate due to strain-rate sensitivity of silicon electrodes of Li-ion batteries. <i>Journal of Power Sources</i> , 2014, 270, 569-575.	7.8	96
51	Mechanical behavior of poly(methyl methacrylate)-based ionogels. <i>Soft Matter</i> , 2014, 10, 7993-8000.	2.7	24
52	Hybrid Hydrogels with Extremely High Stiffness and Toughness. <i>ACS Macro Letters</i> , 2014, 3, 520-523.	4.8	354
53	Bauschinger effect in thin metal films: Discrete dislocation dynamics study. <i>Journal of Applied Physics</i> , 2014, 115, 013507.	2.5	21
54	An apparatus for performing microtensile tests at elevated temperatures inside a scanning electron microscope. <i>Acta Materialia</i> , 2013, 61, 7500-7510.	7.9	32

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55	Measurements of the Fracture Energy of Lithiated Silicon Electrodes of Li-Ion Batteries. Nano Letters, 2013, 13, 5570-5577.	9.1	151
56	Effects of stretching and cycling on the fatigue behavior of polymer-supported Ag thin films. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2013, 575, 86-93.	5.6	57
57	Force and stroke of a hydrogel actuator. Soft Matter, 2013, 9, 8504.	2.7	56
58	Islands stretch test for measuring the interfacial fracture energy between a hard film and a soft substrate. Journal of Applied Physics, 2013, 113, .	2.5	12
59	<i>In-situ</i> X-ray diffraction combined with scanning AC nanocalorimetry applied to a Fe <sub>0.84</sub> Ni <sub>0.16</sub> thin-film sample. Applied Physics Letters, 2013, 102, 201902.	3.3	33
60	Scanning AC nanocalorimetry study of Zr/B reactive multilayers. Journal of Applied Physics, 2013, 114, .	2.5	27
61	Scanning AC nanocalorimetry combined with <i>in-situ</i> x-ray diffraction. Journal of Applied Physics, 2013, 113, .	2.5	36
62	Solidification of Au-Cu-Si alloys investigated by a combinatorial approach. Journal of Applied Physics, 2012, 111, .	2.5	30
63	Debonding and fracture of ceramic islands on polymer substrates. Journal of Applied Physics, 2012, 111, .	2.5	25
64	Dislocation climb in two-dimensional discrete dislocation dynamics. Journal of Applied Physics, 2012, 111, .	2.5	59
65	A scanning AC calorimetry technique for the analysis of nano-scale quantities of materials. Review of Scientific Instruments, 2012, 83, 114901.	1.3	39
66	Highly stretchable and tough hydrogels. Nature, 2012, 489, 133-136.	27.8	4,089
67	Concurrent Reaction and Plasticity during Initial Lithiation of Crystalline Silicon in Lithium-Ion Batteries. Journal of the Electrochemical Society, 2012, 159, A238-A243.	2.9	256
68	Experimental determination of equations of state for ideal elastomeric gels. Soft Matter, 2012, 8, 8121.	2.7	97
69	Kinetics of Initial Lithiation of Crystalline Silicon Electrodes of Lithium-Ion Batteries. Nano Letters, 2012, 12, 5039-5047.	9.1	206
70	Reactive Flow in Silicon Electrodes Assisted by the Insertion of Lithium. Nano Letters, 2012, 12, 4397-4403.	9.1	160
71	Indentation: A simple, nondestructive method for characterizing the mechanical and transport properties of pH-sensitive hydrogels. Journal of Materials Research, 2012, 27, 152-160.	2.6	52
72	Combining combinatorial nanocalorimetry and X-ray diffraction techniques to study the effects of composition and quench rate on Au-Cu-Si metallic glasses. Scripta Materialia, 2012, 66, 178-181.	5.2	49

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73	Fatigue of polymer-supported Ag thin films. Scripta Materialia, 2012, 66, 915-918.	5.2	73
74	Lithium-Assisted Plastic Deformation of Silicon Electrodes in Lithium-Ion Batteries: A First-Principles Theoretical Study. Nano Letters, 2011, 11, 2962-2967.	9.1	301
75	Inelastic hosts as electrodes for high-capacity lithium-ion batteries. Journal of Applied Physics, 2011, 109, .	2.5	151
76	Large Plastic Deformation in High-Capacity Lithium-Ion Batteries Caused by Charge and Discharge. Journal of the American Ceramic Society, 2011, 94, s226.	3.8	276
77	Precipitation and thermal fatigue in Ni-Ti-Zr shape memory alloy thin films by combinatorial nanocalorimetry. Acta Materialia, 2011, 59, 5116-5124.	7.9	30
78	Analysis of Ti-Ni-Hf shape memory alloys by combinatorial nanocalorimetry. Acta Materialia, 2011, 59, 7602-7614.	7.9	34
79	Stiffening of organosilicate glasses by organic cross-linking. Acta Materialia, 2011, 59, 44-52.	7.9	63
80	Influence of CH <sub>2</sub> content and network defects on the elastic properties of organosilicate glasses. Physical Review B, 2011, 83, .	3.2	8
81	Improving the stretchability of as-deposited Ag coatings on poly-ethylene-terephthalate substrates through use of an acrylic primer. Journal of Applied Physics, 2011, 109, .	2.5	44
82	Indentation of polydimethylsiloxane submerged in organic solvents. Journal of Materials Research, 2011, 26, 785-795.	2.6	87
83	Poroelastic relaxation indentation of thin layers of gels. Journal of Applied Physics, 2011, 110, 086103.	2.5	61
84	Bottom-up Modeling of the Elastic Properties of Organosilicate Glasses and their Relation to Composition and Network Defects. Materials Research Society Symposia Proceedings, 2011, 1297, 17.	0.1	2
85	The effect of film thickness on the failure strain of polymer-supported metal films. Acta Materialia, 2010, 58, 1679-1687.	7.9	221
86	Nano-thermal transport array: An instrument for combinatorial measurements of heat transfer in nanoscale films. Thin Solid Films, 2010, 518, 7093-7106.	1.8	33
87	Combinatorial nanocalorimetry. Journal of Materials Research, 2010, 25, 2086-2100.	2.6	62
88	Using indentation to characterize the poroelasticity of gels. Applied Physics Letters, 2010, 96, .	3.3	236
89	Quantitative Interfacial Energy Measurements of Adhesion-Promoted Thin Copper Films by Supercritical Fluid Deposition on Barrier Layers. Journal of Engineering Materials and Technology, Transactions of the ASME, 2010, 132, .	1.4	9
90	Fracture of electrodes in lithium-ion batteries caused by fast charging. Journal of Applied Physics, 2010, 108, .	2.5	348

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91	The effect of porogen loading on the stiffness and fracture energy of brittle organosilicates. Journal of Materials Research, 2009, 24, 107-116.	2.6	41
92	Inorganic islands on a highly stretchable polyimide substrate. Journal of Materials Research, 2009, 24, 3338-3342.	2.6	54
93	Water diffusion and fracture behavior in nanoporous low-k dielectric film stacks. Journal of Applied Physics, 2009, 106, 033503.	2.5	30
94	Determining the elastic modulus and hardness of an ultra-thin film on a substrate using nanoindentation. Journal of Materials Research, 2009, 24, 1114-1126.	2.6	157
95	Thermal modeling of laser-annealing-induced crystallization of amorphous NiTi thin films. Applied Physics A: Materials Science and Processing, 2008, 90, 689-694.	2.3	8
96	Electromigration-induced extrusion failures in Cu/low-k interconnects. Journal of Applied Physics, 2008, 104, .	2.5	33
97	Water diffusion and fracture in organosilicate glass film stacks. Acta Materialia, 2007, 55, 2455-2464.	7.9	27
98	T-Stress of a Bi-Material Strip Under Generalized Edge Loads. International Journal of Fracture, 2007, 142, 315-322.	2.2	5
99	Measuring the fracture toughness of ultra-thin films with application to AlTa coatings. International Journal of Fracture, 2007, 144, 173-179.	2.2	25
100	Novel technique for measuring the mechanical properties of porous materials by nanoindentation. Journal of Materials Research, 2006, 21, 715-724.	2.6	109
101	Crystallization kinetics of amorphous NiTi shape memory alloy thin films. Scripta Materialia, 2006, 54, 925-930.	5.2	68
102	Parallel nano-Differential Scanning Calorimetry: A New Device for Combinatorial Analysis of Complex nano-Scale Material Systems. Materials Research Society Symposia Proceedings, 2006, 924, 1.	0.1	8
103	Micromechanics of macroelectronics. Particuology: Science and Technology of Particles, 2005, 3, 321-328.	0.4	48
104	Constraint Effects on Thin Film Channel Cracking Behavior. Journal of Materials Research, 2005, 20, 2266-2273.	2.6	52
105	High ductility of a metal film adherent on a polymer substrate. Applied Physics Letters, 2005, 87, 161910.	3.3	262
106	The effects of passivation layer and film thickness on the mechanical behavior of freestanding electroplated Cu thin films with constant microstructure. Materials Research Society Symposia Proceedings, 2003, 795, 164.	0.1	5
107	Microstructure Evolution of On-substrate NiTi Shape Memory Alloy Thin Films. Materials Research Society Symposia Proceedings, 2003, 795, 469.	0.1	0
108	The Mechanical Properties of Electroplated Cu Thin Films Measured by means of the Bulge Test Technique. Materials Research Society Symposia Proceedings, 2001, 695, 1.	0.1	36

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109	A Contact-Mechanics Based Model for Dishing and Erosion in Chemical-Mechanical Polishing. Materials Research Society Symposia Proceedings, 2001, 671, 1.	0.1	12
110	Numerical study on the measurement of thin film mechanical properties by means of nanoindentation. Journal of Materials Research, 2001, 16, 2974-2982.	2.6	312
111	A Finite Element Study on the Nanoindentation of Thin Films. Materials Research Society Symposia Proceedings, 2000, 649, 131.	0.1	2
112	A simple technique for measuring the adhesion of brittle films to ductile substrates with application to diamond-coated titanium. Journal of Materials Research, 1997, 12, 1900-1910.	2.6	81
113	A New Technique For Visualizing The Displacement Field Of Indentations: The Case Of A Soft Film On A Hard Substrate. Materials Research Society Symposia Proceedings, 1997, 505, 71.	0.1	0
114	Blister Test Analysis Methods. Materials Research Society Symposia Proceedings, 1994, 356, 585.	0.1	12
115	Indentation modulus of elastically anisotropic half spaces. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 1993, 67, 1045-1056.	0.6	259
116	Accuracy and Reliability of Bulge Test Experiments. Materials Research Society Symposia Proceedings, 1993, 308, 159.	0.1	20
117	Re-Examining the Bulge Test: Methods for Improving Accuracy and Reliability. Materials Research Society Symposia Proceedings, 1991, 239, 257.	0.1	9
118	Structure and Mechanical Properties of Fe/Zr Multilayers.. Materials Research Society Symposia Proceedings, 1991, 239, 493.	0.1	1