

Sybrand van der Zwaag

List of Publications by Year in descending order

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100
papers

3,254
citations

186265

28
h-index

161849

54
g-index

101
all docs

101
docs citations

101
times ranked

3655
citing authors

#	ARTICLE	IF	CITATIONS
1	Charting the complete elastic properties of inorganic crystalline compounds. <i>Scientific Data</i> , 2015, 2, 150009.	5.3	642
2	Turning Vulcanized Natural Rubber into a Self-Healing Polymer: Effect of the Disulfide/Polysulfide Ratio. <i>ACS Sustainable Chemistry and Engineering</i> , 2016, 4, 5776-5784.	6.7	173
3	Multiple crack healing of a Ti ₂ AlC ceramic. <i>Journal of the European Ceramic Society</i> , 2012, 32, 1813-1820.	5.7	155
4	A conceptual study into the potential of Mn ₂ AlX _n -phase ceramics for self-healing of crack damage. <i>Journal of the European Ceramic Society</i> , 2015, 35, 37-45.	5.7	129
5	Experimental characterization of the turbulent boundary layer over a porous trailing edge for noise abatement. <i>Journal of Sound and Vibration</i> , 2019, 443, 537-558.	3.9	98
6	Oxidation and Crack Healing Behavior of a Fine-Grained Cr ₂ AlC Ceramic. <i>Journal of the American Ceramic Society</i> , 2013, 96, 892-899.	3.8	94
7	A rheological and spectroscopic study on the kinetics of self-healing in a single-component diels-alder copolymer and its underlying chemical reaction. <i>Journal of Polymer Science Part A</i> , 2014, 52, 1669-1675.	2.3	86
8	Repeated crack healing in MAX-phase ceramics revealed by 4D in situ synchrotron X-ray tomographic microscopy. <i>Scientific Reports</i> , 2016, 6, 23040.	3.3	80
9	A numerical study into the effects of elongated capsules on the healing efficiency of liquid-based systems. <i>Computational Materials Science</i> , 2009, 47, 506-511.	3.0	76
10	Healable dual organic-inorganic crosslinked sol-gel based polymers: Crosslinking density and tetrasulfide content effect. <i>Journal of Polymer Science Part A</i> , 2014, 52, 1953-1961.	2.3	68
11	Synthesis of high-purity, isotropic or textured Cr ₂ AlC bulk ceramics by spark plasma sintering of pressure-less sintered powders. <i>Journal of the European Ceramic Society</i> , 2015, 35, 1393-1400.	5.7	64
12	Self-Healing Phenomena in Metals. <i>Advanced Materials Interfaces</i> , 2018, 5, 1800226.	3.7	64
13	Cohesive-zone modelling of crack nucleation and propagation in particulate composites. <i>Engineering Fracture Mechanics</i> , 2015, 149, 170-190.	4.3	62
14	Applying SEM-Based X-ray Microtomography to Observe Self-Healing in Solvent Encapsulated Thermoplastic Materials. <i>Advanced Engineering Materials</i> , 2010, 12, 228-234.	3.5	59
15	Adhesion and Long-Term Barrier Restoration of Intrinsic Self-Healing Hybrid Sol-Gel Coatings. <i>ACS Applied Materials & Interfaces</i> , 2016, 8, 4126-4136.	8.0	59
16	Imaging the Molecular Motions of Autonomous Repair in a Self-Healing Polymer. <i>Advanced Materials</i> , 2017, 29, 1701017.	21.0	55
17	Analysis and experimental validation of the figure of merit for piezoelectric energy harvesters. <i>Materials Horizons</i> , 2018, 5, 444-453.	12.2	52
18	Peripherally decorated binary microcapsules containing two liquids. <i>Journal of Materials Chemistry</i> , 2008, 18, 5390.	6.7	51

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19	On the use of TiC as high-temperature healing particles in alumina based composites. Journal of the European Ceramic Society, 2016, 36, 4155-4162.	5.7	44
20	Modeling of soft impingement effect during solid-state partitioning phase transformations in binary alloys. Journal of Materials Science, 2011, 46, 1328-1336.	3.7	42
21	Self-healing thermally conductive adhesives. Journal of Intelligent Material Systems and Structures, 2014, 25, 67-74.	2.5	35
22	Self Healing of Creep Damage by Gold Precipitation in Iron Alloys. Advanced Engineering Materials, 2015, 17, 598-603.	3.5	35
23	Setup for EMI Shielding Effectiveness Tests of Electrically Conductive Polymer Composites at Frequencies up to 3.0 GHz. IEEE Access, 2017, 5, 16665-16675.	4.2	33
24	Autonomous damage initiated healing in a thermo-responsive ionomer. Polymer International, 2010, 59, 1031-1038.	3.1	32
25	A metallurgical interpretation of the static recrystallization kinetics of an intercritically deformed C-Mn steel. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2004, 35, 1889-1898.	2.2	31
26	Mechanisms of broadband noise generation on metal foam edges. Physics of Fluids, 2019, 31, .	4.0	31
27	Prediction and Validation of the Austenite Phase Fraction upon Intercritical Annealing of Medium Mn Steels. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2015, 46, 4978-4985.	2.2	29
28	A novel observation of strain-induced ferrite-to-austenite retransformation after intercritical deformation of C-Mn steel. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2004, 35, 2789-2797.	2.2	28
29	Prediction of Decarburized Ferrite Depth of Hypoeutectoid Steel with Simultaneous Oxidation. ISIJ International, 2012, 52, 549-558.	1.4	28
30	Piezoelectric and mechanical properties of structured PZT-epoxy composites. Journal of Materials Research, 2013, 28, 635-641.	2.6	28
31	A novel multi-pass dual-indenter scratch test to unravel abrasion damage formation in construction steels. Wear, 2015, 322-323, 51-60.	3.1	28
32	Creating a Protective Shell for Reactive MoSi ₂ Particles in High-Temperature Ceramics. Journal of the American Ceramic Society, 2015, 98, 2609-2616.	3.8	26
33	Response to Comment on "Turning Vulcanized Natural Rubber into a Self-Healing Polymer: Effect of the Disulfide/Polysulfide Ratio". ACS Sustainable Chemistry and Engineering, 2017, 5, 11127-11129.	6.7	26
34	Experimental observations on the correlation between microstructure and fracture of multiphase steels. International Journal of Materials Research, 2006, 97, 1723-1731.	0.3	24
35	Indirect evidence for the existence of the Mn partitioning spike during the austenite to ferrite transformation. Philosophical Magazine Letters, 2012, 92, 86-92.	1.2	24
36	Predicting the Effect of Mo, Ni, and Si on the Bainitic Stasis. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 3429-3437.	2.2	24

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37	Autonomous high-temperature healing of surface cracks in Al ₂ O ₃ containing Ti ₂ AlC particles. Journal of the American Ceramic Society, 2018, 101, 5684-5693.	3.8	24
38	High Piezoelectric Voltage Coefficient in Structured Lead-Free (K,Na,Li)NbO ₃ Particulate-Epoxy Composites. Journal of the American Ceramic Society, 2016, 99, 3957-3963.	3.8	23
39	Piezoelectric and mechanical properties of novel composites of PZT and a liquid crystalline thermosetting resin. Journal of Materials Science, 2007, 42, 6417-6425.	3.7	22
40	The Computational Design of W and Co-Containing Creep-Resistant Steels with Barely Coarsening Laves Phase and M ₂₃ C ₆ as the Strengthening Precipitates. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2014, 45, 6067-6074.	2.2	22
41	Identifying the Role of Primary and Secondary Interactions on the Mechanical Properties and Healing of Densely Branched Polyimides. Macromolecules, 2018, 51, 8333-8345.	4.8	22
42	3D gradient auxetic soft mechanical metamaterials fabricated by additive manufacturing. Applied Physics Letters, 2021, 118, .	3.3	22
43	Analysis of the fractal dimension of grain boundaries of AA7050 aluminum alloys and its relationship to fracture toughness. Journal of Materials Science, 2012, 47, 6246-6253.	3.7	21
44	Selection of healing agents for autonomous healing of alumina at high temperatures. Journal of the European Ceramic Society, 2016, 36, 4141-4145.	5.7	21
45	Numerical Investigation into the Effect of Splats and Pores on the Thermal Fracture of Air Plasma-Sprayed Thermal Barrier Coatings. Journal of Thermal Spray Technology, 2019, 28, 1881-1892.	3.1	19
46	A Review of Self-healing Metals: Fundamentals, Design Principles and Performance. Acta Metallurgica Sinica (English Letters), 2020, 33, 1167-1179.	2.9	19
47	Micro-scale Strain Distribution in Hot-worked Duplex Stainless Steel. Steel Research International, 2005, 76, 137-141.	1.8	18
48	Application of the stagnant stage concept for monitoring Mn partitioning at the austenite-ferrite interface in the intercritical region for Fe-Mn-C alloys. Philosophical Magazine Letters, 2012, 92, 547-555.	1.2	18
49	Enhancing energy harvesting potential of (K,Na,Li)NbO ₃ -epoxy composites via Li substitution. Journal of the American Ceramic Society, 2017, 100, 1108-1117.	3.8	18
50	Computational design of precipitation strengthened austenitic heat-resistant steels. Philosophical Magazine, 2013, 93, 3391-3412.	1.6	17
51	Healing of Early Stage Fatigue Damage in Ionomer/Fe ₃ O ₄ Nanoparticle Composites. Polymers, 2016, 8, 436.	4.5	17
52	Modelling the fracture behaviour of thermal barrier coatings containing healing particles. Materials and Design, 2018, 157, 75-86.	7.0	16
53	Damage evolution in a self-healing air plasma sprayed thermal barrier coating containing self-shielding MoSi ₂ particles. Journal of the American Ceramic Society, 2019, 102, 4899-4910.	3.8	16
54	Experimental Evidence of the Effect of Alloying Additions on the Stagnant Stage Length During Cyclic Partial Phase Transformations. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2013, 44, 5617-5621.	2.2	15

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55	Controlling Healing and Toughness in Polyurethanes by Branch-Mediated Tube Dilation. <i>Macromolecules</i> , 2019, 52, 8067-8078.	4.8	15
56	Ca-modified Al-Mg-Sc alloy with high strength at elevated temperatures due to a hierarchical microstructure. <i>Journal of Materials Science</i> , 2021, 56, 16145-16157.	3.7	15
57	Predicting the Austenite Fraction After Intercritical Annealing in Lean Steels as a Function of the Initial Microstructure. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2014, 45, 1675-1679.	2.2	14
58	An Overview of the Cyclic Partial Austenite-Ferrite Transformation Concept and Its Potential. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2017, 48, 2720-2729.	2.2	13
59	Abrasion resistance characterization of low alloy construction steels: A comparison between three different scratch test protocols. <i>Wear</i> , 2017, 384-385, 106-113.	3.1	13
60	Role of Polymeric Coating on Metallic Foams to Control the Aeroacoustic Noise Reduction of Airfoils with Permeable Trailing Edges. <i>Materials</i> , 2019, 12, 1087.	2.9	13
61	The Effect of Interfacial Element Partitioning on Ferrite and Bainite Formation. <i>Jom</i> , 2016, 68, 1320-1328.	1.9	12
62	An In-Situ LSCM Study on Bainite Formation in a Fe-0.2C-1.5Mn-2.0Cr Alloy. <i>Metals</i> , 2018, 8, 498.	2.3	12
63	Robust piezoelectric composites for energy harvesting in high-strain environments. <i>Journal of Intelligent Material Systems and Structures</i> , 2013, 24, 2262-2269.	2.5	11
64	The effect of calcining temperature on the properties of 0-3 piezoelectric composites of PZT and a liquid crystalline thermosetting polymer. <i>Journal of Electroceramics</i> , 2011, 27, 13-19.	2.0	10
65	<i>In Situ</i> High-Temperature EBSD and 3D Phase Field Studies of the Austenite-Ferrite Transformation in a Medium Mn Steel. <i>Microscopy and Microanalysis</i> , 2019, 25, 639-655.	0.4	10
66	A Physical Analysis of the Stress Relaxation Kinetics of Deformed Austenite in C-Mn Steel. <i>Steel Research International</i> , 2006, 77, 595-602.	1.8	9
67	A Micromechanical Study of the Deformation Behavior of TRIP-Assisted Multiphase Steels as a Function of the Microstructural Parameters of the Retained Austenite. <i>Advanced Engineering Materials</i> , 2009, 11, 153-157.	3.5	9
68	A micromechanical fracture analysis to investigate the effect of healing particles on the overall mechanical response of a self-healing particulate composite. <i>Fatigue and Fracture of Engineering Materials and Structures</i> , 2019, 42, 533-545.	3.4	9
69	Property and Cost Optimisation of Novel UHS Stainless Steels via a Genetic Alloy Design Approach. <i>ISIJ International</i> , 2011, 51, 1005-1010.	1.4	8
70	Full strength and toughness recovery after repeated cracking and healing in bone-like high temperature ceramics. <i>Scientific Reports</i> , 2020, 10, 18990.	3.3	8
71	From Scratch Closure to Electrolyte Barrier Restoration in Self-Healing Polyurethane Coatings. <i>ACS Applied Polymer Materials</i> , 2021, 3, 2802-2812.	4.4	8
72	Self-Healing Materials are Coming of Age. <i>Advanced Materials Interfaces</i> , 2018, 5, 1800736.	3.7	7

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73	A first step towards computational design of W-containing self-healing ferritic creep resistant steels. Science and Technology of Advanced Materials, 2020, 21, 641-652.	6.1	7
74	Evolution of the mixed-mode character of solid-state phase transformations in metals involving solute partitioning. International Journal of Materials Research, 2006, 97, 356-361.	0.8	6
75	Ab-initio modeling of metastable precipitation processes in aluminum 7xxx alloys. International Journal of Materials Research, 2012, 103, 972-979.	0.3	6
76	Predicting the cooperative effect of Mn-Si and Mn-Mo on the incomplete bainite formation in quaternary Fe-C alloys. Philosophical Magazine Letters, 2018, 98, 161-171.	1.2	6
77	Analysis of Sn-Bi Solders: X-ray Micro Computed Tomography Imaging and Microstructure Characterization in Relation to Properties and Liquid Phase Healing Potential. Materials, 2021, 14, 153.	2.9	6
78	On the use of non-MPB lead zirconium titanate (PZT) granules for piezoelectric ceramic-polymer sensorial composites. Journal of Materials Science: Materials in Electronics, 2016, 27, 9683-9689.	2.2	5
79	Layer-by-Layer Electrode Fabrication for Improved Performance of Porous Polyimide-Based Supercapacitors. Materials, 2022, 15, 4.	2.9	5
80	Linking Porosity to Rolling Reduction and Fatigue Lifetime of Hot Rolled AA7xxx Alloys by 3D X-Ray Computed Tomography. Advanced Engineering Materials, 2012, 14, 457-463.	3.5	4
81	Process-time Optimization of Vacuum Degassing Using a Genetic Alloy Design Approach. Materials, 2014, 7, 7997-8011.	2.9	4
82	An Analytical Approach to Model Heterogeneous Recrystallization Kinetics Taking into Account the Natural Spatial Inhomogeneity of Deformation. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2016, 47, 231-238.	2.2	4
83	Linking interfacial work of deformation from deconvoluted macro-rheological spectrum to early stage healing in selected polyurethanes. Physical Chemistry Chemical Physics, 2020, 22, 21750-21760.	2.8	4
84	Linking Crack Tip Morphology to Tear Toughness of Hot Rolled AA7050 Alloys Using X-Ray Computed Tomography. Advanced Engineering Materials, 2012, 14, 449-456.	3.5	3
85	Analysis of the state of poling of lead zirconate titanate (PZT) particles in a Zn-ionomer composite. Ferroelectrics, 2016, 493, 139-150.	0.6	3
86	On the Cobalt-Tungsten/Chromium Balance in Martensitic Creep Resistant Steels. Steel Research International, 2018, 89, 1700320.	1.8	3
87	The Compositional Dependence of the Microstructure and Properties of CMSX-4 Superalloys. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2018, 49, 406-416.	2.2	3
88	On the Relationship between the Chromium Concentration, the Z-Phase Formation and the Creep Strength of Ferritic-Martensitic Steels. Steel Research International, 2018, 89, 1800177.	1.8	3
89	Determination of Mode Switching in Cyclic Partial Phase Transformation in Fe-0.1C-xMn Alloys as a Function of the Mn Concentration. Jom, 2019, 71, 1313-1321.	1.9	3
90	Evolution of the mixed-mode character of solid-state phase transformations in metals involving solute partitioning. International Journal of Materials Research, 2022, 97, 356-361.	0.3	3

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91	The influence of the lateral filament texture on the compressive properties of PpPTA aramid filaments. Journal of Materials Science, 2010, 45, 2708-2714.	3.7	2
92	Effect of the Initial Microstructure and Thermal Path on the Final Microstructure and Bendability of a High Strength Ferrite-martensite Dual Phase Steel. ISIJ International, 2021, 61, 1650-1659.	1.4	2
93	Modelling of the $\beta \rightarrow \alpha + \beta'$ transformation in a metastable β Ti alloy based on the growth kinetics and the morphology of the α plates. International Journal of Materials Research, 2007, 98, 476-484.	0.3	2
94	Tuning piezoproperties of BiFeO_3 ceramic by cobalt and titanium dual doping. Journal of Applied Physics, 2022, 131, 214104.	2.5	2
95	Modelling the Stress Relaxation Kinetics of Intercritically Deformed Austenite and Ferrite in C-Mn Steel. Steel Research International, 2006, 77, 603-613.	1.8	1
96	Sparse quantum Gaussian processes to counter the curse of dimensionality. Quantum Machine Intelligence, 2021, 3, 1.	4.8	1
97	Modelling the growth and filling of creep-induced grain-boundary cavities in self-healing alloys. Journal of Materials Science, 2022, 57, 12034-12054.	3.7	1
98	Effect of Strain Rate on the Subsequent Softening and Precipitation Kinetics in a Nb-Microalloyed Steel. Steel Research International, 2005, 76, 650-655.	1.8	0
99	Relating the fatigue lifetime of hot rolled AA7xxx alloys to the pore size distribution as determined by 3D X-ray tomography. Materials Research Society Symposia Proceedings, 2012, 1421, 12.	0.1	0
100	Deterioration of the piezoelectric properties of $(\text{Bi}_{0.5}\text{Na}_{0.5})\text{TiO}_3$ when using Na_2CO_3 as a sintering aid: A crystallographic and microstructural study. Journal of Applied Physics, 2021, 129, 134102.	2.5	0