

# Dirk Ponge

## List of Publications by Year in descending order

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134  
papers

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22153  
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135  
docs citations

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times ranked

6611  
citing authors

#	ARTICLE	IF	CITATIONS
1	Orientation gradients and geometrically necessary dislocations in ultrafine grained dual-phase steels studied by 2D and 3D EBSD. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2010, 527, 2738-2746.	5.6	1,482
2	Ultrastrong steel via minimal lattice misfit and high-density nanoprecipitation. Nature, 2017, 544, 460-464.	27.8	843
3	Deformation and fracture mechanisms in fine- and ultrafine-grained ferrite/martensite dual-phase steels and the effect of aging. Acta Materialia, 2011, 59, 658-670.	7.9	618
4	Overview of processing, microstructure and mechanical properties of ultrafine grained bcc steels. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2006, 441, 1-17.	5.6	498
5	An Overview of Dual-Phase Steels: Advances in Microstructure-Oriented Processing and Micromechanically Guided Design. Annual Review of Materials Research, 2015, 45, 391-431.	9.3	469
6	Grain boundary segregation engineering in metallic alloys: A pathway to the design of interfaces. Current Opinion in Solid State and Materials Science, 2014, 18, 253-261.	11.5	466
7	Design of a novel Mn-based 1GPa duplex stainless TRIP steel with 60% ductility by a reduction of austenite stability. Acta Materialia, 2011, 59, 4653-4664.	7.9	422
8	Ultrastrong Medium-Entropy Single-Phase Alloys Designed via Severe Lattice Distortion. Advanced Materials, 2019, 31, e1807142.	21.0	301
9	Mechanical properties of an ultrafine grained C-Mn steel processed by warm deformation and annealing. Acta Materialia, 2005, 53, 4881-4892.	7.9	299
10	Bone-like crack resistance in hierarchical metastable nanolaminate steels. Science, 2017, 355, 1055-1057.	12.6	297
11	Effect of grain refinement to 1¼m on strength and toughness of dual-phase steels. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2010, 527, 7832-7840.	5.6	294
12	Strain hardening by dynamic slip band refinement in a high-Mn lightweight steel. Acta Materialia, 2016, 116, 188-199.	7.9	276
13	Microstructure and crystallographic texture of an ultrafine grained C-Mn steel and their evolution during warm deformation and annealing. Acta Materialia, 2005, 53, 845-858.	7.9	264
14	Segregation engineering enables nanoscale martensite to austenite phase transformation at grain boundaries: A pathway to ductile martensite. Acta Materialia, 2013, 61, 6132-6152.	7.9	264
15	Chemical gradients across phase boundaries between martensite and austenite in steel studied by atom probe tomography and simulation. Acta Materialia, 2011, 59, 364-374.	7.9	255
16	Nanoprecipitate-hardened 1.5GPa steels with unexpected high ductility. Scripta Materialia, 2009, 60, 1141-1144.	5.2	248
17	Grain boundary segregation engineering and austenite reversion turn embrittlement into toughness: Example of a 9 wt.% medium Mn steel. Acta Materialia, 2015, 86, 182-192.	7.9	229
18	Linear complexions: Confined chemical and structural states at dislocations. Science, 2015, 349, 1080-1083.	12.6	227

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19	Smaller is less stable: Size effects on twinning vs. transformation of reverted austenite in TRIP-maraging steels. <i>Acta Materialia</i> , 2014, 79, 268-281.	7.9	225
20	Improvement of the work hardening rate of ultrafine grained steels through second phase particles. <i>Scripta Materialia</i> , 2005, 52, 1075-1080.	5.2	208
21	Nanolaminate transformation-induced plasticity–twinning-induced plasticity steel with dynamic strain partitioning and enhanced damage resistance. <i>Acta Materialia</i> , 2015, 85, 216-228.	7.9	207
22	The effects of prior austenite grain boundaries and microstructural morphology on the impact toughness of intercritically annealed medium Mn steel. <i>Acta Materialia</i> , 2017, 122, 199-206.	7.9	196
23	3D structural and atomic-scale analysis of lath martensite: Effect of the transformation sequence. <i>Acta Materialia</i> , 2015, 95, 366-377.	7.9	191
24	Segregation assisted grain boundary precipitation in a model Al-Zn-Mg-Cu alloy. <i>Acta Materialia</i> , 2018, 156, 318-329.	7.9	189
25	Strengthening and strain hardening mechanisms in a precipitation-hardened high-Mn lightweight steel. <i>Acta Materialia</i> , 2017, 140, 258-273.	7.9	179
26	Nanoscale austenite reversion through partitioning, segregation and kinetic freezing: Example of a ductile 2GPa Fe–Cr–C steel. <i>Acta Materialia</i> , 2012, 60, 2790-2804.	7.9	167
27	Development of microstructure and texture of medium carbon steel during heavy warm deformation. <i>Acta Materialia</i> , 2004, 52, 2209-2220.	7.9	146
28	Spectral TRIP enables ductile 1.1 GPa martensite. <i>Acta Materialia</i> , 2016, 111, 262-272.	7.9	141
29	Hydrogen-assisted failure in Ni-based superalloy 718 studied under in situ hydrogen charging: The role of localized deformation in crack propagation. <i>Acta Materialia</i> , 2017, 128, 365-374.	7.9	136
30	Making sustainable aluminum by recycling scrap: The science of “dirty” alloys. <i>Progress in Materials Science</i> , 2022, 128, 100947.	32.8	134
31	Beating hydrogen with its own weapon: Nano-twin gradients enhance embrittlement resistance of a high-entropy alloy. <i>Materials Today</i> , 2018, 21, 1003-1009.	14.2	127
32	Chemical boundary engineering: A new route toward lean, ultrastrong yet ductile steels. <i>Science Advances</i> , 2020, 6, eaay1430.	10.3	120
33	Ultrastrong lightweight compositionally complex steels via dual-nanoprecipitation. <i>Science Advances</i> , 2020, 6, .	10.3	118
34	On the Effect of Manganese on Grain Size Stability and Hardenability in Ultrafine-Grained Ferrite/Martensite Dual-Phase Steels. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2012, 43, 37-46.	2.2	116
35	Multi-scale and spatially resolved hydrogen mapping in a Ni–Nb model alloy reveals the role of the $\gamma'$ phase in hydrogen embrittlement of alloy 718. <i>Acta Materialia</i> , 2016, 109, 69-81.	7.9	116
36	Current Challenges and Opportunities in Microstructure-Related Properties of Advanced High-Strength Steels. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2020, 51, 5517-5586.	2.2	115

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37	Hydrogen trapping and embrittlement in high-strength Al alloys. <i>Nature</i> , 2022, 602, 437-441.	27.8	109
38	Revealing fracture mechanisms of medium manganese steels with and without delta-ferrite. <i>Acta Materialia</i> , 2019, 164, 683-696.	7.9	108
39	Phase nucleation through confined spinodal fluctuations at crystal defects evidenced in Fe-Mn alloys. <i>Nature Communications</i> , 2018, 9, 1137.	12.8	101
40	Designing Ultrahigh Strength Steels with Good Ductility by Combining Transformation Induced Plasticity and Martensite Aging. <i>Advanced Engineering Materials</i> , 2009, 11, 547-555.	3.5	99
41	Hydrogen embrittlement of an interstitial equimolar high-entropy alloy. <i>Corrosion Science</i> , 2018, 136, 403-408.	6.6	96
42	Macroscopic to nanoscopic in situ investigation on yielding mechanisms in ultrafine grained medium Mn steels: Role of the austenite-ferrite interface. <i>Acta Materialia</i> , 2019, 178, 10-25.	7.9	95
43	Ti and its alloys as examples of cryogenic focused ion beam milling of environmentally-sensitive materials. <i>Nature Communications</i> , 2019, 10, 942.	12.8	89
44	Chemical heterogeneity enhances hydrogen resistance in high-strength steels. <i>Nature Materials</i> , 2021, 20, 1629-1634.	27.5	83
45	Segregation of boron at prior austenite grain boundaries in a quenched martensitic steel studied by atom probe tomography. <i>Scripta Materialia</i> , 2015, 96, 13-16.	5.2	81
46	Characterizing solute hydrogen and hydrides in pure and alloyed titanium at the atomic scale. <i>Acta Materialia</i> , 2018, 150, 273-280.	7.9	81
47	Dependence of hydrogen embrittlement mechanisms on microstructure-driven hydrogen distribution in medium Mn steels. <i>Acta Materialia</i> , 2020, 183, 313-328.	7.9	78
48	Enhancing Hydrogen Embrittlement Resistance of Lath Martensite by Introducing Nano-Films of Interlath Austenite. <i>Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science</i> , 2015, 46, 3797-3802.	2.2	77
49	Carbon and strain partitioning in a quenched and partitioned steel containing ferrite. <i>Acta Materialia</i> , 2019, 165, 561-576.	7.9	75
50	Design of high-strength steels by microalloying and thermomechanical treatment. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2007, 463, 138-146.	5.6	74
51	Confined chemical and structural states at dislocations in Fe-9wt%Mn steels: A correlative TEM-atom probe study combined with multiscale modelling. <i>Acta Materialia</i> , 2017, 124, 305-315.	7.9	73
52	On the mechanical heterogeneity in dual phase steel grades: Activation of slip systems and deformation of martensite in DP800. <i>Acta Materialia</i> , 2020, 183, 274-284.	7.9	71
53	Phase boundary segregation-induced strengthening and discontinuous yielding in ultrafine-grained duplex medium-Mn steels. <i>Acta Materialia</i> , 2020, 200, 389-403.	7.9	70
54	Ultrastrong and Ductile Soft Magnetic High-Entropy Alloys via Coherent Ordered Nanoprecipitates. <i>Advanced Materials</i> , 2021, 33, e2102139.	21.0	69

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55	Multi-scale characterization of austenite reversion and martensite recovery in a cold-rolled medium-Mn steel. <i>Acta Materialia</i> , 2019, 166, 512-530.	7.9	67
56	Ultrafine Grained Ferrite/Martensite Dual Phase Steel Fabricated by Large Strain Warm Deformation and Subsequent Intercritical Annealing. <i>ISIJ International</i> , 2008, 48, 1096-1101.	1.4	66
57	Microstructure Control during Fabrication of Ultrafine Grained Dual-phase Steel: Characterization and Effect of Intercritical Annealing Parameters. <i>ISIJ International</i> , 2012, 52, 874-883.	1.4	65
58	Designing Heusler nanoprecipitates by elastic misfit stabilization in Fe-Mn maraging steels. <i>Acta Materialia</i> , 2014, 76, 94-105.	7.9	65
59	Mechanisms of subgrain coarsening and its effect on the mechanical properties of carbon-supersaturated nanocrystalline hypereutectoid steel. <i>Acta Materialia</i> , 2015, 84, 110-123.	7.9	60
60	Competition between formation of carbides and reversed austenite during tempering of a medium-manganese steel studied by thermodynamic-kinetic simulations and atom probe tomography. <i>Acta Materialia</i> , 2018, 147, 165-175.	7.9	60
61	On the origin of the improvement of shape memory effect by precipitating VC in Fe-Mn-Si-based shape memory alloys. <i>Acta Materialia</i> , 2018, 155, 222-235.	7.9	60
62	High-rate superplasticity in an equiatomic medium-entropy VCoNi alloy enabled through dynamic recrystallization of a duplex microstructure of ordered phases. <i>Acta Materialia</i> , 2020, 194, 106-117.	7.9	57
63	Thermodynamics of grain boundary segregation, interfacial spinodal and their relevance for nucleation during solid-solid phase transitions. <i>Acta Materialia</i> , 2019, 168, 109-120.	7.9	56
64	Parameter free quantitative analysis of atom probe data by correlation functions: Application to the precipitation in Al-Zn-Mg-Cu. <i>Scripta Materialia</i> , 2018, 154, 106-110.	5.2	55
65	Formation mechanism of $\epsilon$ -carbides and deformation behavior in Si-alloyed FeMnAlC lightweight steels. <i>Acta Materialia</i> , 2020, 198, 258-270.	7.9	54
66	Current Challenges and Opportunities Toward Understanding Hydrogen Embrittlement Mechanisms in Advanced High-Strength Steels: A Review. <i>Acta Metallurgica Sinica (English Letters)</i> , 2021, 34, 741-754.	2.9	54
67	Superplasticity in a lean Fe-Mn-Al steel. <i>Nature Communications</i> , 2017, 8, 751.	12.8	51
68	Beyond Solid Solution High-Entropy Alloys: Tailoring Magnetic Properties via Spinodal Decomposition. <i>Advanced Functional Materials</i> , 2021, 31, 2007668.	14.9	51
69	Experimental and numerical study of mechanical properties of multi-phase medium-Mn TWIP-TRIP steel: Influences of strain rate and phase constituents. <i>Acta Materialia</i> , 2019, 177, 250-265.	7.9	50
70	Reversible dislocation movement, martensitic transformation and nano-twinning during elastic cyclic loading of a metastable high entropy alloy. <i>Acta Materialia</i> , 2020, 185, 474-492.	7.9	48
71	Joint investigation of strain partitioning and chemical partitioning in ferrite-containing TRIP-assisted steels. <i>Acta Materialia</i> , 2020, 186, 374-388.	7.9	47
72	Investigation of Orientation Gradients in Pearlite in Hypoeutectoid Steel by use of Orientation Imaging Microscopy. <i>Steel Research International</i> , 2007, 78, 38-44.	1.8	45

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73	Strain partitioning and strain localization in medium manganese steels measured by in situ microscopic digital image correlation. <i>Materialia</i> , 2019, 5, 100252.	2.7	42
74	Atomic scale investigation of non-equilibrium segregation of boron in a quenched Mo-free martensitic steel. <i>Ultramicroscopy</i> , 2015, 159, 240-247.	1.9	40
75	Deformation compatibility between nanotwinned and recrystallized grains enhances resistance to interface cracking in cyclic loaded stainless steel. <i>Acta Materialia</i> , 2019, 165, 87-98.	7.9	39
76	High stress twinning in a compositionally complex steel of very high stacking fault energy. <i>Nature Communications</i> , 2022, 13, .	12.8	38
77	The impact of grain-scale strain localization on strain hardening of a high-Mn steel: Real-time tracking of the transition from the $\epsilon$ -martensite transformation to twinning. <i>Acta Materialia</i> , 2020, 197, 123-136.	7.9	37
78	Reversion and re-aging of a peak aged Al-Zn-Mg-Cu alloy. <i>Scripta Materialia</i> , 2020, 188, 269-273.	5.2	37
79	Refinement of grain boundary carbides in a $\text{Si-Cr}$ spring steel by thermomechanical treatment. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2006, 426, 194-201.	5.6	36
80	Metastability alloy design. <i>MRS Bulletin</i> , 2019, 44, 266-272.	3.5	36
81	Could face-centered cubic titanium in cold-rolled commercially-pure titanium only be a Ti-hydride?. <i>Scripta Materialia</i> , 2020, 178, 39-43.	5.2	36
82	Influence of Mn Content on the Microstructure and Mechanical Properties of Ultrafine Grained C-Mn Steels. <i>ISIJ International</i> , 2005, 45, 1721-1726.	1.4	35
83	Interfaces and defect composition at the near-atomic scale through atom probe tomography investigations. <i>Journal of Materials Research</i> , 2018, 33, 4018-4030.	2.6	35
84	Enhanced superplasticity in an Al-alloyed multicomponent $\text{Mn-Si-Cr-C}$ steel. <i>Acta Materialia</i> , 2014, 63, 232-244.	7.9	34
85	Inheritance of Dislocations and Crystallographic Texture during Martensitic Reversion into Austenite. <i>ISIJ International</i> , 2013, 53, 1286-1288.	1.4	33
86	New Insights into the Atomic-Scale Structures and Behavior of Steels. <i>Microscopy Today</i> , 2012, 20, 44-48.	0.3	32
87	Transition from Diffusive to Displacive Austenite Reversion in Low-Alloy Steel. <i>ISIJ International</i> , 2013, 53, 2275-2277.	1.4	31
88	Characterization of the Microstructure, Crystallographic Texture and Segregation of an As-cast Duplex Stainless Steel Slab. <i>Steel Research International</i> , 2008, 79, 482-488.	1.8	30
89	Dynamic strain-induced transformation: An atomic scale investigation. <i>Scripta Materialia</i> , 2015, 109, 23-27.	5.2	30
90	In-situ synthesis via laser metal deposition of a lean $\text{Cu-3.4Cr-0.6Nb}$ (at%) conductive alloy hardened by Cr nano-scale precipitates and by Laves phase micro-particles. <i>Acta Materialia</i> , 2020, 197, 330-340.	7.9	30

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91	Microstructure and deformation behavior of two TWIP/TRIP high entropy alloys upon grain refinement. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2021, 802, 140661.	5.6	30
92	Effect of intercritical deformation on microstructure and mechanical properties of a low-silicon aluminum-added hot-rolled directly quenched and partitioned steel. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2016, 656, 200-215.	5.6	29
93	Segregation-assisted spinodal and transient spinodal phase separation at grain boundaries. <i>Npj Computational Materials</i> , 2020, 6, .	8.7	29
94	(Al, Zn) <sub>3</sub> Zr dispersoids assisted $\delta$ -Fe <sub>2</sub> precipitation in an Al-Zn-Mg-Cu-Zr alloy. <i>Materialia</i> , 2020, 10, 100641.	2.7	28
95	Martensite to austenite reversion in a high-Mn steel: Partitioning-dependent two-stage kinetics revealed by atom probe tomography, in-situ magnetic measurements and simulation. <i>Acta Materialia</i> , 2019, 166, 178-191.	7.9	27
96	Mechanisms of austenite growth during intercritical annealing in medium manganese steels. <i>Scripta Materialia</i> , 2022, 206, 114228.	5.2	27
97	Quantification of solute deuterium in titanium deuteride by atom probe tomography with both laser pulsing and high-voltage pulsing: influence of the surface electric field. <i>New Journal of Physics</i> , 2019, 21, 053025.	2.9	26
98	Improving the ductility of ultrahigh-strength medium Mn steels via introducing pre-existed austenite acting as a "reservoir" for Mn atoms. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2019, 749, 235-240.	5.6	26
99	Interplay of Chemistry and Faceting at Grain Boundaries in a Model Al Alloy. <i>Physical Review Letters</i> , 2020, 124, 106102.	7.8	25
100	Localized deformation inside the Lüders front of a medium manganese steel. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2021, 824, 141816.	5.6	25
101	The dual role of martensitic transformation in fatigue crack growth. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2022, 119, .	7.1	25
102	The hidden structure dependence of the chemical life of dislocations. <i>Science Advances</i> , 2021, 7, .	10.3	24
103	Effect of Nb micro-alloying on austenite nucleation and growth in a medium manganese steel during intercritical annealing. <i>Acta Materialia</i> , 2022, 229, 117786.	7.9	24
104	Grain boundary characterization and grain size measurement in an ultrafine-grained steel. <i>International Journal of Materials Research</i> , 2004, 95, 513-517.	0.8	23
105	Comparative study of hydrogen embrittlement resistance between additively and conventionally manufactured 304L austenitic stainless steels. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2021, 803, 140499.	5.6	23
106	Pulsed-laser atom probe studies of a precipitation hardened maraging TRIP steel. <i>Ultramicroscopy</i> , 2011, 111, 623-627.	1.9	22
107	A sustainable ultra-high strength Fe <sub>18</sub> Mn <sub>3</sub> Ti maraging steel through controlled solute segregation and $\delta$ -Mn nanoprecipitation. <i>Nature Communications</i> , 2022, 13, 2330.	12.8	22
108	Hydrogen-assisted failure in Inconel 718 fabricated by laser powder bed fusion: The role of solidification substructure in the embrittlement. <i>Scripta Materialia</i> , 2022, 207, 114308.	5.2	20







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127	Improved Atom Probe Methodology for Studying Carbon Redistribution in Low-Carbon High-Ms Lath Martensitic Steels. Microscopy and Microanalysis, 2017, 23, 706-707.	0.4	4
128	1 billion tons of nanostructure “segregation engineering enables confined transformation effects at lattice defects in steels. IOP Conference Series: Materials Science and Engineering, 2017, 219, 012006.	0.6	3
129	Austenite Grain Coarsening Behaviour in a Medium Carbon Si-Cr Spring Steel with and without Vanadium. Steel Research International, 2006, 77, 590-594.	1.8	2
130	Strain hardening engineering via grain size control in laser powder-bed fusion. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2022, 838, 142773.	5.6	1
131	Atom probe tomography reveals options for microstructural design of steels and titanium alloys by segregation engineering. MATEC Web of Conferences, 2015, 33, 01001.	0.2	0
132	Reversion to Ultrafine-Grained Austenite in a Medium-Mn AHSS. Microscopy and Microanalysis, 2018, 24, 2228-2229.	0.4	0
133	Grain boundary segregation and precipitation in an Al-Zn-Mg-Cu alloy. MATEC Web of Conferences, 2020, 326, 01004.	0.2	0
134	On the influence of heavy warm reduction on the microstructure and mechanical properties of a medium-carbon ferritic “pearlitic steel. International Journal of Materials Research, 2022, 95, 1108-1114.	0.3	0