

# Ayrat A Nazarov

## List of Publications by Year in descending order

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99  
papers

2,617  
citations

257101

24  
h-index

197535

49  
g-index

103  
all docs

103  
docs citations

103  
times ranked

1331  
citing authors

#	ARTICLE	IF	CITATIONS
1	Deformation behaviour of ultra-fine-grained copper. <i>Acta Metallurgica Et Materialia</i> , 1994, 42, 2467-2475.	1.9	547
2	On the structure, stress fields and energy of nonequilibrium grain boundaries. <i>Acta Metallurgica Et Materialia</i> , 1993, 41, 1033-1040.	1.9	270
3	Model for the prediction of the mechanical behaviour of nanocrystalline materials. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 1993, 172, 23-29.	2.6	101
4	Microstructures and hardness of ultrafine-grained Ni3Al. <i>Acta Metallurgica Et Materialia</i> , 1993, 41, 2953-2962.	1.9	88
5	On the nature of high internal stresses in ultrafine grained materials. <i>Scripta Materialia</i> , 1994, 4, 93-101.	0.5	81
6	Random disclination ensembles in ultrafine-grained materials produced by severe plastic deformation. <i>Scripta Materialia</i> , 1996, 34, 729-734.	2.6	73
7	Disclination-structural unit model of grain boundaries. <i>Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties</i> , 1989, 59, 1113-1118.	0.8	72
8	Continuum and atomistic studies of a disclinated crack in a bicrystalline nanowire. <i>Physical Review B</i> , 2006, 73, .	1.1	59
9	Competing Relaxation Mechanisms in a Disclinated Nanowire: Temperature and Size Effects. <i>Physical Review Letters</i> , 2007, 98, 035501.	2.9	58
10	Morphology and in-plane thermal conductivity of hybrid graphene sheets. <i>Applied Physics Letters</i> , 2012, 101, .	1.5	56
11	Effects of carbon nanotube content and annealing temperature on the hardness of CNT reinforced aluminum nanocomposites processed by the high pressure torsion technique. <i>Journal of Alloys and Compounds</i> , 2014, 613, 68-73.	2.8	56
12	Relaxation of a disclinated tricrystalline nanowire. <i>Acta Materialia</i> , 2008, 56, 5828-5836.	3.8	54
13	Incorporation model for the spreading of extrinsic grain boundary dislocations. <i>Scripta Metallurgica Et Materialia</i> , 1990, 24, 1929-1934.	1.0	50
14	Crack nucleation at disclinated triple junctions. <i>Physical Review B</i> , 2007, 76, .	1.1	50
15	Multiscale modeling approach for calculating grain-boundary energies from first principles. <i>Physical Review B</i> , 1998, 57, R3181-R3184.	1.1	46
16	Kinetics of Grain Boundary Recovery in Deformed Polycrystals. <i>Journal of Materials Science</i> , 2000, 8, 315-322.	1.2	43
17	Models of the defect structure and analysis of the mechanical behavior of nanocrystals. <i>Scripta Materialia</i> , 1995, 6, 775-778.	0.5	40
18	Analysis of substructure evolution during simple shear of polycrystals by means of a combined viscoplastic self-consistent and disclination modeling approach. <i>Acta Materialia</i> , 2006, 54, 985-995.	3.8	37

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19	Production, properties and application prospects of bulk nanostructured materials. Journal of Materials Science, 2008, 43, 7257-7263.	1.7	32
20	Effect of Stone-Thrower-Wales defect on structural stability of graphene at zero and finite temperatures. Europhysics Letters, 2013, 103, 46001.	0.7	31
21	On the pile-up model of the grain size-yield stress relation for nanocrystals. Scripta Materialia, 1996, 34, 697-701.	2.6	29
22	Microstructure changes in ultrafine-grained nickel processed by high pressure torsion under ultrasonic treatment. Ultrasonics, 2018, 82, 313-321.	2.1	29
23	Nonequilibrium grain boundaries in bulk nanostructured metals and their recovery under the influences of heating and cyclic deformation. Review. Letters on Materials, 2018, 8, 372-381.	0.2	27
24	On the average misorientation angle of general tilt boundaries. Philosophical Magazine Letters, 1989, 60, 187-193.	0.5	26
25	Misorientation dependence of the energy of symmetrical tilt boundaries in hcp metals: prediction by the disclination-structural unit model. Philosophical Magazine, 2004, 84, 785-806.	0.7	26
26	Stability and relaxation mechanisms of a wedge disclination in an HCP bicrystalline nanowire. Modelling and Simulation in Materials Science and Engineering, 2006, 14, 647-661.	0.8	25
27	Grain-boundary diffusion in nanocrystals with a time-dependent diffusion coefficient. Physics of the Solid State, 2003, 45, 1166-1169.	0.2	23
28	Microstructure and mechanical behavior of UFG copper processed by ECAP following different processing regimes. Philosophical Magazine, 2012, 92, 690-704.	0.7	23
29	Atomistic simulations of the tensile strength of a disclinated bicrystalline nanofilm. Philosophical Magazine, 2008, 88, 3181-3191.	0.7	22
30	On the role of non-equilibrium grain-boundary structure in the yield and flow stress of polycrystals. Philosophical Magazine A: Physics of Condensed Matter, Structure, Defects and Mechanical Properties, 1994, 69, 327-340.	0.8	21
31	Elastic models of symmetrical $\sim 001$ and $\sim 011$ tilt grain boundaries in diamond. Physical Review B, 2000, 61, 928-936.	1.1	21
32	Ensembles of gliding grain boundary dislocations in ultrafine grained materials produced by severe plastic deformation. Scripta Materialia, 1997, 37, 1155-1161.	2.6	20
33	Nonequilibrium grain boundaries and their relaxation under oscillating stresses in columnar nickel nanocrystals studied by molecular dynamics. Computational Materials Science, 2018, 151, 204-213.	1.4	19
34	Computer simulation of the effect of ultrasound and annealing on the structure of a two-dimensional severely deformed nanocrystalline material. Physics of Metals and Metallography, 2011, 111, 513-519.	0.3	17
35	High strength state in low carbon steel with submicron fibrous structure. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 1996, 206, 39-44.	2.6	16
36	Modelling grain refinement in fcc metals during equal-channel angular pressing by route $\epsilon$ . International Journal of Materials Research, 2007, 98, 167-171.	0.1	16

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37	Drift of dislocation tripoles under ultrasound influence. <i>Ultrasonics</i> , 2016, 64, 77-82.	2.1	16
38	Softening and hardening of ECAP nickel under ultrasonic treatment. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2017, 698, 136-142.	2.6	16
39	Relaxation of the residual defect structure in deformed polycrystals under ultrasonic action. <i>Physics of Metals and Metallography</i> , 2017, 118, 621-629.	0.3	16
40	Grain Size Refinement due to Relaxation of Disclination Junction Configurations in the Course of Plastic Deformation of Polycrystals. <i>Physics of the Solid State</i> , 2005, 47, 845.	0.2	15
41	Grain rotation by dislocation climb in a finite-size grain boundary. <i>Acta Materialia</i> , 2012, 60, 7064-7077.	3.8	15
42	Disclinations in bulk nanostructured materials: their origin, relaxation and role in material properties. <i>Advances in Natural Sciences: Nanoscience and Nanotechnology</i> , 2013, 4, 033002.	0.7	15
43	Ultrasonic influence on evolution of disordered dislocation structures. <i>Modelling and Simulation in Materials Science and Engineering</i> , 2017, 25, 085010.	0.8	13
44	Effect of ultrasonic treatment on the structure and microhardness of ultrafine grained nickel processed by high pressure torsion. <i>Letters on Materials</i> , 2017, 7, 85-90.	0.2	13
45	Internal stress effect on grain-boundary diffusion in submicrocrystalline metals. <i>Philosophical Magazine Letters</i> , 2000, 80, 221-227.	0.5	12
46	Long-range stress fields of disordered dislocation arrays: Two types of disorder, and two decay laws. <i>Philosophical Magazine Letters</i> , 1993, 68, 303-307.	0.5	11
47	Structure evolution in coarse-grained nickel under ultrasonic treatment. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2018, 731, 231-238.	2.6	11
48	Molecular dynamics simulation of the relaxation of a grain boundary disclination dipole under ultrasonic stresses. <i>Letters on Materials</i> , 2016, 6, 179-182.	0.2	11
49	On the Origin and Energy of Triple Junction Defects Due to the Finite Length of Grain Boundaries. <i>Journal of Materials Science</i> , 2003, 11, 417-424.	1.2	10
50	Changes in the microstructure and mechanical properties of nanomaterials under an ultrasonic wave effect. <i>Journal of Machinery Manufacture and Reliability</i> , 2014, 43, 153-159.	0.1	10
51	Relaxation of dislocation structures under ultrasonic influence. <i>International Journal of Solids and Structures</i> , 2019, 156-157, 1-13.	1.3	10
52	On the Hierarchy of Dislocation Descriptions of Grain Boundary Structures. <i>Physica Status Solidi A</i> , 1990, 122, 495-502.	1.7	9
53	On the annealing of junction disclinations in deformed polycrystals. <i>Philosophical Magazine</i> , 2003, 83, 2653-2667.	0.7	9
54	The use of nanostructured materials and nanotechnologies for the elaboration of hollow structures. <i>Nanotechnologies in Russia</i> , 2010, 5, 108-122.	0.7	9

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55	Fabrication, microstructure, and microhardness of copper composites reinforced by carbon nanotubes. <i>Physics of the Solid State</i> , 2015, 57, 1206-1212.	0.2	9
56	Simulation of the Effect of Ultrasound on the Dislocation Structure of Deformed Polycrystals. <i>Physics of Metals and Metallography</i> , 2018, 119, 993-1003.	0.3	9
57	Dynamic long-period nanosized states in lattice structure. <i>Russian Physics Journal</i> , 2009, 52, 132-137.	0.2	8
58	Interaction of dislocation tripoles with a standing sound wave. <i>Physics of Metals and Metallography</i> , 2015, 116, 1057-1065.	0.3	8
59	Current achievements on superplasticity and related phenomena at the Institute for Metals Superplasticity Problems. <i>Letters on Materials</i> , 2018, 8, 510-516.	0.2	8
60	A Revision of the Models for the Accommodation of Extrinsic Grain Boundary Dislocations. <i>Journal of Materials Science</i> , 2000, 8, 71-76.	1.2	7
61	Diffusion-accomodated rigid-body translations along grain boundaries in nanostructured materials. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2003, 359, 247-252.	2.6	7
62	Computer simulation of crack formation in a nickel bicrystal nanowire containing a wedge disclination. <i>Physics of Metals and Metallography</i> , 2007, 104, 274-280.	0.3	7
63	Low-temperature plasticity in nanocrystalline titanium and copper. <i>Physics of the Solid State</i> , 2007, 49, 678-683.	0.2	7
64	Dynamics of edge dislocations in a two-dimensional crystal at finite temperatures. <i>Physics of the Solid State</i> , 2009, 51, 1809-1813.	0.2	7
65	Effect of Ultrasonic Treatment on the Microstructure and Properties of Nanostructured Nickel Processed by High Pressure Torsion. <i>Materials Science Forum</i> , 0, 667-669, 605-609.	0.3	7
66	Scientific fundamentals of high-efficiency roll forming technology for axially symmetrical parts of a gas-turbine engine rotor of high-temperature alloy. <i>Journal of Machinery Manufacture and Reliability</i> , 2013, 42, 419-426.	0.1	7
67	A method for the construction of initial structures for molecular dynamics simulations of nanocrystals with nonequilibrium grain boundaries containing extrinsic dislocations. <i>Letters on Materials</i> , 2018, 8, 5-10.	0.2	7
68	A mechanism of grain nucleation during relaxation of the latent energy of junction disclinations in the course of plastic deformation. <i>Technical Physics Letters</i> , 2005, 31, 1015-1018.	0.2	6
69	Principles of Fabrication of Bulk Ultrafine-Grained and Nanostructured Materials by Multiple Isothermal Forging. <i>Materials Science Forum</i> , 0, 638-642, 1702-1707.	0.3	6
70	Annealing-Induced Grain Rotation In Ultrafine-Grained Aluminum Alloy. <i>Reviews on Advanced Materials Science</i> , 2018, 55, 69-77.	1.4	6
71	Effect of Ultrasonic Treatment on the Characteristics of Superplasticity of Titanium Alloy Ti-6Al-4V. <i>Defect and Diffusion Forum</i> , 2018, 385, 53-58.	0.4	6
72	Stress fields of disordered dislocation arrays: Finite walls. <i>Philosophical Magazine Letters</i> , 1993, 68, 297-301.	0.5	5

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73	Analysis of the Fundamental Mechanisms and Efficiency of the Deformation Methods of Nanostructuring. <i>Materials Science Forum</i> , 0, 584-586, 29-34.	0.3	5
74	Simulation of the effect of strengthening-phase particles on the plastic deformation of a two-dimensional polycrystal. <i>Physics of Metals and Metallography</i> , 2012, 113, 302-311.	0.3	5
75	Ultrasonic Treatment of Ti-5Al-0.5V Alloy Subjected to Equal-Channel Angular Pressing. <i>Metals and Materials International</i> , 2022, 28, 1257-1263.	1.8	4
76	Field electron emission from a copper-based composite reinforced with carbon nanotubes. <i>Letters on Materials</i> , 2019, 9, 566-570.	0.2	4
77	Ultrasonic Welding of Nickel with Coarse and Ultrafine Grained Structures. <i>Metals</i> , 2021, 11, 1800.	1.0	4
78	Structural Model of Ultrafine Grained Materials Produced by Severe Plastic Deformation. <i>Key Engineering Materials</i> , 1994, 97-98, 59-64.	0.4	3
79	Properties of Polycrystalline Diamond: Multiscale Modeling Approach. <i>Molecular Simulation</i> , 2000, 24, 197-207.	0.9	3
80	Specific Features of Structural Defects in Twisted Nematic Liquid Crystals under Conditions of Electrohydrodynamic Instability. <i>Physics of the Solid State</i> , 2005, 47, 374.	0.2	3
81	Activation energy for vacancy migration in [001] tilt boundaries in nickel. <i>Physics of Metals and Metallography</i> , 2006, 101, 86-92.	0.3	3
82	Superplastic Roll Forming of Axial Symmetric Articles from Superalloys. <i>Advanced Materials Research</i> , 0, 278, 301-305.	0.3	3
83	Modelling of Grain Boundary Structures by Means of Dislocations. <i>Solid State Phenomena</i> , 2002, 87, 193-204.	0.3	2
84	Energies of formation and activation for migration of grain-boundary vacancies in a nickel bicrystal containing a disclination. <i>Physics of Metals and Metallography</i> , 2006, 102, 198-204.	0.3	2
85	Technological features of a process and equipment for superplastic rolling of axially symmetric heat-resistant alloy components of rotors for modern aircraft engines. <i>Journal of Machinery Manufacture and Reliability</i> , 2014, 43, 311-318.	0.1	2
86	Effect of ultrasonic treatment on the structure of coarse-grained nickel. <i>Materials Science &amp; Engineering A: Structural Materials: Properties, Microstructure and Processing</i> , 2020, 772, 138764.	2.6	2
87	Strength of copper joints obtained by ultrasonic welding using copper intermediate layers in different structure states. <i>Letters on Materials</i> , 2020, 10, 322-327.	0.2	2
88	Ultrasonic spot welded CP Ti/AA2024/Ti alloy joints. <i>Letters on Materials</i> , 2021, 11, 508-513.	0.2	2
89	Stress fields of disordered dislocation arrays: A double wall consisting of dislocation dipoles. <i>Philosophical Magazine Letters</i> , 1995, 72, 49-53.	0.5	1
90	Extrinsic Grain Boundary Dislocations and the Micromechanisms of Superplastic Deformation. <i>Materials Science Forum</i> , 1996, 243-245, 31-40.	0.3	1

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91	The Values of Strain Components and Their Role in Formation of Ultrafine-Grained and Nanosized Structure in Materials by Means of Severe Plastic Deformation. Russian Physics Journal, 2015, 58, 70-78.	0.2	1
92	Molecular Dynamics Study of Nonequilibrium [112] Tilt Grain Boundaries in Ni and their Relaxation under Cyclic Deformation. Journal of Metastable and Nanocrystalline Materials, 2018, 30, 1-10.	0.1	1
93	Molecular dynamics simulation of the effect of cyclic stresses on nanocrystals with nonequilibrium grain boundaries: the role of the grain size. IOP Conference Series: Materials Science and Engineering, 0, 447, 012003.	0.3	1
94	Influence of ultrasound on the structure and properties of nickel processed by equal-channel angular pressing. IOP Conference Series: Materials Science and Engineering, 2018, 447, 012017.	0.3	1
95	A double-gaussian waveguide for ultrasonic treatment of metals. Letters on Materials, 2019, 9, 414-418.	0.2	1
96	Computer Simulation of the Interaction of Junction Disclinations in Nanomaterials with Grain Boundary Vacancies. Solid State Phenomena, 2008, 137, 1-8.	0.3	0
97	Current Status of Research and Development on Superplasticity at the Institute for Metals Superplasticity Problems. Materials Science Forum, 2012, 735, 403-408.	0.3	0
98	Molecular Dynamics Simulation of Nonequilibrium Grain Boundaries in Ultrafine-Grained Nickel and their Relaxation under Cyclic Loading. Defect and Diffusion Forum, 0, 385, 163-168.	0.4	0
99	Microstructure of a titanium sample produced by ultrasonic consolidation. Letters on Materials, 2022, 12, 153-157.	0.2	0