Peter G Vekilov

List of Publications by Year
in descending order

145 papers	8,614 citations	36203 51 h-index	48187 88 g-index
147 all docs	147 docs citations	147 times ranked	5866 citing authors

#	Article	IF	Citations
1	Nucleation. Crystal Growth and Design, 2010, 10, 5007-5019.	1.4	570
2	The two-step mechanism of nucleation of crystals in solution. Nanoscale, 2010, 2, 2346.	2.8	498
3	Dense Liquid Precursor for the Nucleation of Ordered Solid Phases from Solution. Crystal Growth and Design, 2004, 4, 671-685.	1.4	428
4	Quasi-planar nucleus structure in apoferritin crystallization. Nature, 2000, 406, 494-497.	13.7	237
5	Are Nucleation Kinetics of Protein Crystals Similar to Those of Liquid Droplets?. Journal of the American Chemical Society, 2000, 122, 156-163.	6.6	215
6	Entropy and surface engineering in protein crystallization. Acta Crystallographica Section D: Biological Crystallography, 2006, 62, 116-124.	2.5	207
7	Liquid-liquid separation in solutions of normal and sickle cell hemoglobin. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 8479-8483.	3.3	185
8	Direct Determination of the Nucleation Rates of Protein Crystals. Journal of Physical Chemistry B, 1999, 103, 10965-10971.	1.2	180
9	Interactions and Aggregation of Apoferritin Molecules in Solution: Effects of Added Electrolytes. Biophysical Journal, 2000, 78, 2060-2069.	0.2	142
10	Two types of amorphous protein particles facilitate crystal nucleation. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 2154-2159.	3.3	141
11	Evidence for Non-DLVO Hydration Interactions in Solutions of the Protein Apoferritin. Physical Review Letters, 2000, 84, 1339-1342.	2.9	138
12	A Metastable Prerequisite for the Growth of Lumazine Synthase Crystals. Journal of the American Chemical Society, 2005, 127, 3433-3438.	6.6	136
13	What Determines the Rate of Growth of Crystals from Solution?. Crystal Growth and Design, 2007, 7, 2796-2810.	1.4	136
14	Mechanisms of hematin crystallization and inhibition by the antimalarial drug chloroquine. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 4946-4951.	3.3	135
15	Two-step mechanism for the nucleation of crystals from solution. Journal of Crystal Growth, 2005, 275, 65-76.	0.7	123
16	3. Principles of Crystal Nucleation and Growth. , 2003, , 57-94.		121
17	Kinetics of two-step nucleation of crystals. Journal of Chemical Physics, 2005, 122, 244706.	1.2	118
18	Nucleation of ordered solid phases of proteins via a disordered high-density state: Phenomenological approach. Journal of Chemical Physics, 2005, 122, 174905.	1.2	118

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19	Molecular-level thermodynamic and kinetic parameters for the self-assembly of apoferritin molecules into crystals 1 1Edited by W. Baumeister. Journal of Molecular Biology, 2000, 303, 667-678.	2.0	115
20	Diffusion-limited kinetics of the solution-solid phase transition of molecular substances. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 792-796.	3.3	112
21	Metastable Liquid Clusters in Super- and Undersaturated Protein Solutions. Journal of Physical Chemistry B, 2007, 111, 3106-3114.	1.2	112
22	Metastable Mesoscopic Clusters in Solutions of Sickle-Cell Hemoglobin. Biophysical Journal, 2007, 92, 267-277.	0.2	110
23	Two-Step Mechanism of Homogeneous Nucleation of Sickle Cell Hemoglobin Polymers. Biophysical Journal, 2007, 93, 902-913.	0.2	109
24	Nonlinear response of layer growth dynamics in the mixed kinetics-bulk-transport regime. Physical Review E, 1996, 54, 6650-6660.	0.8	105
25	Sickleâ€cell haemoglobin polymerization: is it the primary pathogenic event of sickleâ€cell anaemia?. British Journal of Haematology, 2007, 139, 173-184.	1.2	104
26	Molecular Mechanisms of Crystallization and Defect Formation. Physical Review Letters, 2000, 85, 353-356.	2.9	102
27	Thermodynamic Functions of Concentrated Protein Solutions from Phase Equilibria. Journal of Physical Chemistry B, 2003, 107, 3921-3926.	1.2	100
28	Viscoelasticity in Homogeneous Protein Solutions. Physical Review Letters, 2009, 102, 058101.	2.9	97
29	Direct Observation of Nucleus Structure and Nucleation Pathways in Apoferritin Crystallization. Journal of the American Chemical Society, 2001, 123, 1080-1089.	6.6	96
30	Mechanisms of Homogeneous Nucleation of Polymers of Sickle Cell Anemia Hemoglobin in Deoxy State. Journal of Molecular Biology, 2004, 336, 43-59.	2.0	96
31	Origin of Anomalous Mesoscopic Phases in Protein Solutions. Journal of Physical Chemistry B, 2010, 114, 7620-7630.	1.2	95
32	Antimalarials inhibit hematin crystallization by unique drugâ€"surface site interactions. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 7531-7536.	3.3	91
33	Dynamics of Layer Growth in Protein Crystallization. Chemical Reviews, 2000, 100, 2061-2090.	23.0	90
34	Spinodal for the solution-to-crystal phase transformation. Journal of Chemical Physics, 2005, 123, 014904.	1.2	88
35	Nucleation of protein crystals: critical nuclei, phase behavior, and control pathways. Journal of Crystal Growth, 2001, 232, 63-76.	0.7	86
36	The use of dynamic light scattering and Brownian microscopy to characterize protein aggregation. Review of Scientific Instruments, 2011, 82, 053106.	0.6	86

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37	Effects of Convective Solute and Impurity Transport in Protein Crystal Growth. Journal of Physical Chemistry B, 1998, 102, 5208-5216.	1.2	81
38	Facet morphology response to nonuniformities in nutrient and impurity supply. I. Experiments and interpretation. Journal of Crystal Growth, 1995, 156, 267-278.	0.7	79
39	Recent advances in the understanding of two-step nucleation of protein crystals. Faraday Discussions, 2015, 179, 27-40.	1.6	79
40	Laser Michelson interferometry investigation of protein crystal growth. Journal of Crystal Growth, 1993, 130, 317-320.	0.7	76
41	Phase transitions of folded proteins. Soft Matter, 2010, 6, 5254.	1.2	72
42	High resolution interferometric technique for in-situ studies of crystal growth morphologies and kinetics. Journal of Crystal Growth, 1995, 148, 289-296.	0.7	67
43	Intermolecular Interactions, Nucleation, and Thermodynamics of Crystallization of Hemoglobin C. Biophysical Journal, 2002, 83, 1147-1156.	0.2	66
44	Solvent entropy contribution to the free energy of protein crystallization. Acta Crystallographica Section D: Biological Crystallography, 2002, 58, 1611-1616.	2.5	65
45	Liquid-Liquid Phase Separation in Hemoglobins: Distinct Aggregation Mechanisms of the Î²6 Mutants. Biophysical Journal, 2004, 86, 1702-1712.	0.2	62
46	Ostwald-Like Ripening of the Anomalous Mesoscopic Clusters in Protein Solutions. Journal of Physical Chemistry B, 2012, 116, 10657-10664.	1.2	61
47	Do protein crystals nucleate within dense liquid clusters?. Acta Crystallographica Section F, Structural Biology Communications, 2015, 71, 815-822.	0.4	59
48	Temperature-independent solubility and interactions between apoferritin monomers and dimers in solution. Journal of Crystal Growth, 2001, 232, 21-29.	0.7	58
49	Capillarity Effects on Crystallization Kinetics:Â Insulin. Journal of the American Chemical Society, 2003, 125, 11684-11693.	6.6	58
50	Smooth transition from metastability to instability in phase separating protein solutions. Journal of Chemical Physics, 2004, 121, 7505-7512.	1.2	55
51	Nucleation of Protein Crystals under the Influence of Solution Shear Flow. Annals of the New York Academy of Sciences, 2006, 1077, 214-231.	1.8	55
52	Unsteady crystal growth due to step-bunch cascading. Physical Review E, 1997, 55, 3202-3214.	0.8	51
53	Thermodynamics of the Hydrophobicity in Crystallization of Insulin. Biophysical Journal, 2003, 85, 3935-3942.	0.2	51
54	The Kinetics of Nucleation and Growth of Sickle Cell Hemoglobin Fibers. Journal of Molecular Biology, 2007, 365, 425-439.	2.0	51

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55	Phase diagrams and kinetics of phase transitions in protein solutions. Journal of Physics Condensed Matter, 2012, 24, 193101.	0.7	51
56	Multi-responsive hybrid particles: thermo-, pH-, photo-, and magneto-responsive magnetic hydrogel cores with gold nanorod optical triggers. Nanoscale, 2016, 8, 11851-11861.	2.8	51
57	Facet morphology response to nonuniformities in nutrient and impurity supply. II. Numerical simulations. Journal of Crystal Growth, 1996, 158, 552-559.	0.7	49
58	Anomalous Dense Liquid Condensates Host the Nucleation of Tumor Suppressor p53 Fibrils. IScience, 2019, 12, 342-355.	1.9	46
59	Elementary processes of protein crystal growth. Progress in Crystal Growth and Characterization of Materials, 1993, 26, 25-49.	1.8	45
60	The Physics of Protein Crystallization. Solid State Physics, 2003, 57, 1-147.	1.3	44
61	Nucleus in a droplet. Nature Materials, 2012, 11, 838-840.	13.3	44
62	Nucleation precursors in protein crystallization. Acta Crystallographica Section F, Structural Biology Communications, 2014, 70, 271-282.	0.4	43
63	Chiral and Achiral Mechanisms of Regulation of Calcite Crystallization. Crystal Growth and Design, 2009, 9, 127-135.	1.4	42
64	Molecular mechanisms of microheterogeneity-induced defect formation in ferritin crystallization. Proteins: Structure, Function and Bioinformatics, 2001, 43, 343-352.	1.5	41
65	Crystallization of Transmembrane Proteins in cubo: Mechanisms of Crystal Growth and Defect Formation. Journal of Molecular Biology, 2004, 343, 1243-1254.	2.0	40
66	Enhancement and suppression of protein crystal nucleation due to electrically driven convection. Journal of Crystal Growth, 2005, 275, e1527-e1532.	0.7	40
67	Free Heme and the Polymerization of Sickle Cell Hemoglobin. Biophysical Journal, 2010, 99, 1976-1985.	0.2	40
68	Lack of Dependence of the Sizes of the Mesoscopic Protein Clusters on Electrostatics. Biophysical Journal, 2015, 109, 1959-1968.	0.2	40
69	Lower Incorporation of Impurities in Ferritin Crystals by Suppression of Convection:â€‰ Modeling Results. Crystal Growth and Design, 2001, 1, 73-79.	1.4	38
70	Evidence for the surface-diffusion mechanism of solution crystallization from molecular-level observations with ferritin. Physical Review E, 2002, 66, 021606.	0.8	38
71	A fast response mechanism for insulin storage in crystals may involve kink generation by association of 2D clusters. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 1681-1686.	3.3	38
72	The free heme concentration in healthy human erythrocytes. Blood Cells, Molecules, and Diseases, 2015, 55, 402-409.	0.6	37

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73	Antagonistic cooperativity between crystal growth modifiers. Nature, 2020, 577, 497-501.	13.7	37
74	Molecular Mechanisms of Hematin Crystallization from Organic Solvent. Crystal Growth and Design, 2015, 15, 5535-5542.	1.4	34
75	Nucleation of protein crystals. Progress in Crystal Growth and Characterization of Materials, 2016, 62, 136-154.	1.8	34
76	Differential dynamic microscopy of weakly scattering and polydisperse protein-rich clusters. Physical Review E, 2015, 92, 042712.	0.8	33
77	Nonlinear dynamics of layer growth and consequences for protein crystal perfection. Journal of Crystal Growth, 1999, 196, 261-275.	0.7	32
78	Hematin crystallization from aqueous and organic solvents. Journal of Chemical Physics, 2013, 139, 121911.	1.2	32
79	Solvent Entropy Effects in the Formation of Protein Solid Phases. Methods in Enzymology, 2003, 368, 84-105.	0.4	30
80	What Is the Molecular-Level Role of the Solution Components in Protein Crystallization?. Crystal Growth and Design, 2007, 7, 2239-2246.	1.4	30
81	Anisotropy of the Coulomb Interaction between Folded Proteins: Consequences for Mesoscopic Aggregation of Lysozyme. Biophysical Journal, 2012, 102, 1934-1943.	0.2	28
82	Mesoscopic protein-rich clusters host the nucleation of mutant p53 amyloid fibrils. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	28
83	Increased Stability in Crystal Growth Kinetics in Response to Bulk Transport Enhancement. Physical Review Letters, 1998, 80, 2654-2656.	2.9	27
84	On the methods of determination of homogeneous nucleation rates of protein crystals. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2003, 215, 125-130.	2.3	27
85	Mesoscopic Solute-Rich Clusters in Olanzapine Solutions. Crystal Growth and Design, 2017, 17, 6668-6676.	1.4	26
86	Olanzapine crystal symmetry originates in preformed centrosymmetric solute dimers. Nature Chemistry, 2020, 12, 914-920.	6.6	26
87	Crystallization Mechanisms of Hemoglobin C in the R State. Biophysical Journal, 2004, 87, 2621-2629.	0.2	25
88	Nonclassical Nucleation. ACS Symposium Series, 2020, , 19-46.	0.5	24
89	A second mechanism employed by artemisinins to suppress Plasmodium falciparum hinges on inhibition of hematin crystallization. Journal of Biological Chemistry, 2021, 296, 100123.	1.6	24
90	Miniaturized scintillation technique for protein solubility determinations. Review of Scientific Instruments, 1999, 70, 2845-2849.	0.6	23

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91	Dense liquid droplets as a step source for the crystallization of lumazine synthase. Journal of Crystal Growth, 2005, 275, e1409-e1416.	0.7	22
92	Probing the Twisted Structure of Sickle Hemoglobin Fibers via Particle Simulations. Biophysical Journal, 2016, 110, 2085-2093.	0.2	22
93	Stable Equidistant Step Trains during Crystallization of Insulin. Physical Review Letters, 2003, 90, 225503.	2.9	20
94	Early Onset of Kinetic Roughening due to a Finite Step Width in Hematin Crystallization. Physical Review Letters, 2017, 119, 198101.	2.9	20
95	Growth of Large Hematin Crystals in Biomimetic Solutions. Crystal Growth and Design, 2014, 14, 2123-2127.	1.4	19
96	Polymorphism of Lysozyme Condensates. Journal of Physical Chemistry B, 2017, 121, 9091-9101.	1.2	19
97	Multiple extrema in the intermolecular potential and the phase diagram of protein solutions. Physical Review E, 2006, 73, 061917.	0.8	18
98	Lipid or aqueous medium for hematin crystallization?. CrystEngComm, 2015, 17, 7790-7800.	1.3	18
99	Protein Conformational Flexibility Enables the Formation of Dense Liquid Clusters: Tests Using Solution Shear. Journal of Physical Chemistry Letters, 2016, 7, 2339-2345.	2.1	18
100	Quantitative prediction of erythrocyte sickling for the development of advanced sickle cell therapies. Science Advances, 2019, 5, eaax3905.	4.7	18
101	Shear flow suppresses the volume of the nucleation precursor clusters in lysozyme solutions. Journal of Crystal Growth, 2017, 468, 493-501.	0.7	16
102	Steady, Symmetric, and Reversible Growth and Dissolution of Individual Amyloid-Î² Fibrils. ACS Chemical Neuroscience, 2019, 10, 2967-2976.	1.7	16
103	Grown in a crystal. Nature Nanotechnology, 2011, 6, 82-83.	15.6	15
104	Control of the nucleation of sickle cell hemoglobin polymers by free hematin. Faraday Discussions, 2012, 159, 87.	1.6	15
105	Finite-amplitude instability in growth step trains with overlapping step supply fields. Physical Review E, 1999, 59, 3155-3164.	0.8	14
106	Differential pathways in oxy and deoxy HbC aggregation/crystallization. Proteins: Structure, Function and Bioinformatics, 2001, 42, 99-107.	1.5	13
107	Dissipating step bunches during crystallization under transport control. Physical Review E, 2003, 67, 031606.	0.8	13
108	Interactions of Hemin with Model Erythrocyte Membranes. Journal of Physical Chemistry B, 2010, 114, 4529-4535.	1.2	13

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109	Does Solution Viscosity Scale the Rate of Aggregation of Folded Proteins?. Journal of Physical Chemistry Letters, 2012, 3, 1258-1263.	2.1	13
110	Real time, in-situ, monitoring of apoferritin crystallization and defect formation with molecular resolution. Journal of Crystal Growth, 2001, 232, 188-194.	0.7	12
111	Differential phase-shifting interferometry forin situsurface characterization during solution growth of crystals. Review of Scientific Instruments, 2002, 73, 3540-3545.	0.6	12
112	Metastable Mesoscopic Phases in Concentrated Protein Solutions. Annals of the New York Academy of Sciences, 2009, 1161, 377-386.	1.8	12
113	Characterization of the diffusive dynamics of particles with time-dependent asymmetric microscopy intensity profiles. Soft Matter, 2016, 12, 6926-6936.	1.2	12
114	Frustrated peptide chains at the fibril tip control the kinetics of growth of amyloid-Î² fibrils. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	12
115	Determination of the Transition-State Entropy for Aggregation Suggests How the Growth of Sickle Cell Hemoglobin Polymers can be Slowed. Journal of Molecular Biology, 2008, 377, 882-888.	2.0	11
116	Deconstructing Quinolineâ€Class Antimalarials to Identify Fundamental Physicochemical Properties of Betaâ€Hematin Crystal Growth Inhibitors. Chemistry - A European Journal, 2017, 23, 13638-13647.	1.7	11
117	Differential dynamic microscopy of bidisperse colloidal suspensions. Npj Microgravity, 2017, 3, 21.	1.9	11
118	Free heme in micromolar amounts enhances the attraction between sickle cell hemoglobin molecules. Biopolymers, 2009, 91, 1108-1116.	1.2	10
119	Nucleation of protein condensed phases. Reviews in Chemical Engineering, 2011, 27, 1-13.	2.3	10
120	Two-Step Crystal Nucleation Is Selected Because of a Lower Surface Free Energy Barrier. Crystal Growth and Design, 2021, 21, 5394-5402.	1.4	10
121	Shape change in crystallization of biological macromolecules. MRS Bulletin, 2016, 41, 375-380.	1.7	9
122	Phase Separation and Crystallization of Hemoglobin C in Transgenic Mouse and Human Erythrocytes. Biophysical Journal, 2008, 95, 4025-4033.	0.2	7
123	Nucleation and Growth Mechanisms of Protein Crystals. , 2015, , 795-871.		7
124	Biomimetic Assay for Hematin Crystallization Inhibitors: A New Platform To Screen Antimalarial Drugs. Crystal Growth and Design, 2017, 17, 197-206.	1.4	7
125	Attraction between Permanent Dipoles and London Dispersion Forces Dominate the Thermodynamics of Organic Crystallization. Crystal Growth and Design, 2020, 20, 7429-7438.	1.4	7
126	Spatiotemporal Step Patterns during Crystal Growth in a Transport-Controlled System. Journal of Physical Chemistry B, 2002, 106, 11800-11804.	1.2	6

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127	Kinetics and Mechanisms of Protein Crystallization at the Molecular Level. , 2005, 300, 015-052.		6
128	Nucleation of Crystals in Solution. , 2010, , .		6
129	Thermodynamic mechanism of free heme action on sickle cell hemoglobin polymerization. AICHE Journal, 2015, 61, 2861-2870.	1.8	6
130	Structuring of Organic Solvents at Solid Interfaces and Ramifications for Antimalarial Adsorption on Î²-Hematin Crystals. ACS Applied Materials & Interfaces, 2018, 10, 29288-29298.	4.0	6
131	Molecular Mechanisms of Defect Formation. Methods in Enzymology, 2003, 368, 170-188.	0.4	5
132	Incorporation at Kinks: Kink Density and Activation Barriers. AIP Conference Proceedings, 2007, , .	0.3	5
133	How to Identify the Crystal Growth Unit. Israel Journal of Chemistry, 2021, 61, 818-827.	1.0	5
134	Dual Mode of Action of Organic Crystal Growth Inhibitors. Crystal Growth and Design, 2021, 21, 7053-7064.	1.4	5
135	Localized Generation of Attoliter Protein Solution Droplets by Electrofocused Liquidâ˘'Liquid Separation. Journal of Physical Chemistry B, 2009, 113, 7340-7346.	1.2	4
136	Nucleation and Crystal Growth of Hemoglobins: The Case of HbC. , 2003, 82, 155-176.		3
137	The Ambiguous Functions of the Precursors That Enable Nonclassical Modes of Olanzapine Nucleation and Growth. Crystals, 2021, 11, 738.	1.0	3
138	Chemical engineers and the fundamental understanding of human disease. AICHE Journal, 2008, 54, 2508-2515.	1.8	2
139	Crystallization of Proteins. , 2019, , 414-459.		2
140	Solvent Structure and Dynamics near the Surfaces of Î²-Hematin Crystals. Journal of Physical Chemistry B, 2021, 125, 11264-11274.	1.2	2
141	Precrystallization solute assemblies and crystal symmetry. Faraday Discussions, 2022, 235, 307-321.	1.6	2
142	Spatio-Temporal Patterns in Ferritin Crystal Growth. Materials Research Society Symposia Proceedings, 2002, 724, N7.18.1.	0.1	0
143	Bonding of SU-8 to glass for gastight picoliter reactors allowingin situoptical observation. Journal of Micromechanics and Microengineering, 2013, 23, 105003.	1.5	0
144	Frontispiece: Deconstructing Quinolineâ€Class Antimalarials to Identify Fundamental Physicochemical Properties of Betaâ€Hematin Crystal Growth Inhibitors. Chemistry - A European Journal, 2017, 23, .	1.7	0

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145	Formation of Protein Condensed Phases: Nucleation Mechanisms. Protein and Peptide Letters, 2012, , .	0.4	0