Peter G Vekilov

List of Publications by Citations

140 papers	7,195 citations	49 h-index	81 g-index
147 ext. papers	7,946 ext. citations	5.8 avg, IF	6.54 L-index

#	Paper	IF	Citations
140	Nucleation. *Crystal Growth and Design*, **2010**, 10, 5007-5019	3.5	478
139	The two-step mechanism of nucleation of crystals in solution. *Nanoscale*, **2010**, 2, 2346-57	7.7	374
138	Dense Liquid Precursor for the Nucleation of Ordered Solid Phases from Solution. *Crystal Growth and Design*, **2004**, 4, 671-685	3.5	368
137	Quasi-planar nucleus structure in apoferritin crystallization. *Nature*, **2000**, 406, 494-7	50.4	201
136	Are Nucleation Kinetics of Protein Crystals Similar to Those of Liquid Droplets?. *Journal of the American Chemical Society*, **2000**, 122, 156-163	16.4	193
135	Entropy and surface engineering in protein crystallization. *Acta Crystallographica Section D: Biological Crystallography*, **2006**, 62, 116-24		185
134	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, 8479-83	11.5	164
133	Direct Determination of the Nucleation Rates of Protein Crystals. *Journal of Physical Chemistry B*, **1999**, 103, 10965-10971	3.4	153
132	Evidence for non-DLVO hydration interactions in solutions of the protein apoferritin. *Physical Review Letters*, **2000**, 84, 1339-42	7.4	132
131	A metastable prerequisite for the growth of lumazine synthase crystals. *Journal of the American Chemical Society*, **2005**, 127, 3433-8	16.4	126
130	Interactions and aggregation of apoferritin molecules in solution: effects of added electrolytes. *Biophysical Journal*, **2000**, 78, 2060-9	2.9	125
129	What Determines the Rate of Growth of Crystals from Solution?. *Crystal Growth and Design*, **2007**, 7, 2796-2810	3.5	116
128	3. Principles of Crystal Nucleation and Growth **2003**, 57-94		111
127	Two-step mechanism for the nucleation of crystals from solution. *Journal of Crystal Growth*, **2005**, 275, 65-76	1.6	104
126	Molecular-level thermodynamic and kinetic parameters for the self-assembly of apoferritin molecules into crystals. *Journal of Molecular Biology*, **2000**, 303, 667-78	6.5	104
125	Metastable mesoscopic clusters in solutions of sickle-cell hemoglobin. *Biophysical Journal*, **2007**, 92, 267-77	2.9	103
124	Metastable liquid clusters in super- and undersaturated protein solutions. *Journal of Physical Chemistry B*, **2007**, 111, 3106-14	3.4	103

123	Kinetics of two-step nucleation of crystals. *Journal of Chemical Physics*, **2005**, 122, 244706	3.9	103
122	Nucleation of ordered solid phases of proteins via a disordered high-density state: phenomenological approach. *Journal of Chemical Physics*, **2005**, 122, 174905	3.9	102
121	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	11.5	100
120	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, 792-6	11.5	98
119	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, 4946-51	11.5	93
118	Viscoelasticity in homogeneous protein solutions. *Physical Review Letters*, **2009**, 102, 058101	7.4	88
117	Thermodynamic Functions of Concentrated Protein Solutions from Phase Equilibria. *Journal of Physical Chemistry B*, **2003**, 107, 3921-3926	3.4	88
116	Nonlinear response of layer growth dynamics in the mixed kinetics-bulk-transport regime. *Physical Review E*, **1996**, 54, 6650-6660	2.4	88
115	Origin of anomalous mesoscopic phases in protein solutions. *Journal of Physical Chemistry B*, **2010**, 114, 7620-30	3.4	87
114	Two-step mechanism of homogeneous nucleation of sickle cell hemoglobin polymers. *Biophysical Journal*, **2007**, 93, 902-13	2.9	86
113	Molecular mechanisms of crystallization and defect formation. *Physical Review Letters*, **2000**, 85, 353-6	7.4	86
112	Dynamics of Layer Growth in Protein Crystallization. *Chemical Reviews*, **2000**, 100, 2061-2090	68.1	85
111	Mechanisms of homogeneous nucleation of polymers of sickle cell anemia hemoglobin in deoxy state. *Journal of Molecular Biology*, **2004**, 336, 43-59	6.5	83
110	Spinodal for the solution-to-crystal phase transformation. *Journal of Chemical Physics*, **2005**, 123, 014904	3.9	81
109	Direct observation of nucleus structure and nucleation pathways in apoferritin crystallization. *Journal of the American Chemical Society*, **2001**, 123, 1080-9	16.4	81
108	Nucleation of protein crystals: critical nuclei, phase behavior, and control pathways. *Journal of Crystal Growth*, **2001**, 232, 63-76	1.6	79
107	Effects of Convective Solute and Impurity Transport in Protein Crystal Growth. *Journal of Physical Chemistry B*, **1998**, 102, 5208-5216	3.4	77
106	Sickle-cell haemoglobin polymerization: is it the primary pathogenic event of sickle-cell anaemia?. *British Journal of Haematology*, **2007**, 139, 173-84	4.5	74

105	Facet morphology response to nonuniformities in nutrient and impurity supply. I. Experiments and interpretation. *Journal of Crystal Growth*, **1995**, 156, 267-278	1.6	71
104	Laser Michelson interferometry investigation of protein crystal growth. *Journal of Crystal Growth*, **1993**, 130, 317-320	1.6	70
103	Recent advances in the understanding of two-step nucleation of protein crystals. *Faraday Discussions*, **2015**, 179, 27-40	3.6	68
102	The use of dynamic light scattering and brownian microscopy to characterize protein aggregation. *Review of Scientific Instruments*, **2011**, 82, 053106	1.7	68
101	Phase transitions of folded proteins. *Soft Matter*, **2010**, 6, 5254	3.6	62
100	Solvent entropy contribution to the free energy of protein crystallization. *Acta Crystallographica Section D: Biological Crystallography*, **2002**, 58, 1611-6		62
99	High resolution interferometric technique for in-situ studies of crystal growth morphologies and kinetics. *Journal of Crystal Growth*, **1995**, 148, 289-296	1.6	62
98	Intermolecular interactions, nucleation, and thermodynamics of crystallization of hemoglobin C. *Biophysical Journal*, **2002**, 83, 1147-56	2.9	59
97	Antimalarials inhibit hematin crystallization by unique drug-surface site interactions. *Proceedings of the National Academy of Sciences of the United States of America*, **2017**, 114, 7531-7536	11.5	56
96	Liquid-liquid phase separation in hemoglobins: distinct aggregation mechanisms of the beta6 mutants. *Biophysical Journal*, **2004**, 86, 1702-12	2.9	56
95	Capillarity effects on crystallization kinetics: insulin. *Journal of the American Chemical Society*, **2003**, 125, 11684-93	16.4	53
94	Temperature-independent solubility and interactions between apoferritin monomers and dimers in solution. *Journal of Crystal Growth*, **2001**, 232, 21-29	1.6	53
93	Ostwald-like ripening of the anomalous mesoscopic clusters in protein solutions. *Journal of Physical Chemistry B*, **2012**, 116, 10657-64	3.4	49
92	Smooth transition from metastability to instability in phase separating protein solutions. *Journal of Chemical Physics*, **2004**, 121, 7505-12	3.9	49
91	Nucleation of protein crystals under the influence of solution shear flow. *Annals of the New York Academy of Sciences*, **2006**, 1077, 214-31	6.5	48
90	The kinetics of nucleation and growth of sickle cell hemoglobin fibers. *Journal of Molecular Biology*, **2007**, 365, 425-39	6.5	47
89	Unsteady crystal growth due to step-bunch cascading. *Physical Review E*, **1997**, 55, 3202-3214	2.4	46
88	Thermodynamics of the hydrophobicity in crystallization of insulin. *Biophysical Journal*, **2003**, 85, 3935-42	2.9	45

87	Facet morphology response to nonuniformities in nutrient and impurity supply. II. Numerical simulations. *Journal of Crystal Growth*, **1996**, 158, 552-559	1.6	45
86	Do protein crystals nucleate within dense liquid clusters?. *Acta Crystallographica Section F, Structural Biology Communications*, **2015**, 71, 815-22	1.1	44
85	Multi-responsive hybrid particles: thermo-, pH-, photo-, and magneto-responsive magnetic hydrogel cores with gold nanorod optical triggers. *Nanoscale*, **2016**, 8, 11851-61	7.7	42
84	Phase diagrams and kinetics of phase transitions in protein solutions. *Journal of Physics Condensed Matter*, **2012**, 24, 193101	1.8	41
83	Elementary processes of protein crystal growth. *Progress in Crystal Growth and Characterization of Materials*, **1993**, 26, 25-49	3.5	41
82	Enhancement and suppression of protein crystal nucleation due to electrically driven convection. *Journal of Crystal Growth*, **2005**, 275, e1527-e1532	1.6	38
81	Chiral and Achiral Mechanisms of Regulation of Calcite Crystallization. *Crystal Growth and Design*, **2009**, 9, 127-135	3.5	35
80	Molecular mechanisms of microheterogeneity-induced defect formation in ferritin crystallization. *Proteins: Structure, Function and Bioinformatics*, **2001**, 43, 343-352	4.2	35
79	Lower Incorporation of Impurities in Ferritin Crystals by Suppression of Convection: Modeling Results. *Crystal Growth and Design*, **2001**, 1, 73-79	3.5	35
78	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, 1681-6	11.5	34
77	The Physics of Protein Crystallization. *Solid State Physics*, **2003**, 57, 1-147	2	34
76	Crystallization of transmembrane proteins in cubo: mechanisms of crystal growth and defect formation. *Journal of Molecular Biology*, **2004**, 343, 1243-54	6.5	34
75	Lack of Dependence of the Sizes of the Mesoscopic Protein Clusters on Electrostatics. *Biophysical Journal*, **2015**, 109, 1959-68	2.9	33
74	Nucleation precursors in protein crystallization. *Acta Crystallographica Section F, Structural Biology Communications*, **2014**, 70, 271-82	1.1	30
73	Free heme and the polymerization of sickle cell hemoglobin. *Biophysical Journal*, **2010**, 99, 1976-85	2.9	30
72	Evidence for the surface-diffusion mechanism of solution crystallization from molecular-level observations with ferritin. *Physical Review E*, **2002**, 66, 021606	2.4	30
71	Nonlinear dynamics of layer growth and consequences for protein crystal perfection. *Journal of Crystal Growth*, **1999**, 196, 261-275	1.6	30
70	Anomalous Dense Liquid Condensates Host the Nucleation of Tumor Suppressor p53 Fibrils. *IScience*, **2019**, 12, 342-355	6.1	29

69	What Is the Molecular-Level Role of the Solution Components in Protein Crystallization?. *Crystal Growth and Design*, **2007**, 7, 2239-2246	3.5	28
68	Anisotropy of the Coulomb interaction between folded proteins: consequences for mesoscopic aggregation of lysozyme. *Biophysical Journal*, **2012**, 102, 1934-43	2.9	27
67	Solvent entropy effects in the formation of protein solid phases. *Methods in Enzymology*, **2003**, 368, 84-105	1.7	27
66	Nucleation of protein crystals. *Progress in Crystal Growth and Characterization of Materials*, **2016**, 62, 136-154	3.5	26
65	Molecular Mechanisms of Hematin Crystallization from Organic Solvent. *Crystal Growth and Design*, **2015**, 15, 5535-5542	3.5	24
64	Increased Stability in Crystal Growth Kinetics in Response to Bulk Transport Enhancement. *Physical Review Letters*, **1998**, 80, 2654-2656	7.4	24
63	Differential dynamic microscopy of weakly scattering and polydisperse protein-rich clusters. *Physical Review E*, **2015**, 92, 042712	2.4	23
62	On the methods of determination of homogeneous nucleation rates of protein crystals. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **2003**, 215, 125-130	5.1	23
61	The free heme concentration in healthy human erythrocytes. *Blood Cells, Molecules, and Diseases*, **2015**, 55, 402-9	2.1	22
60	Hematin crystallization from aqueous and organic solvents. *Journal of Chemical Physics*, **2013**, 139, 121911	3.9	22
59	Crystallization mechanisms of hemoglobin C in the R state. *Biophysical Journal*, **2004**, 87, 2621-9	2.9	20
58	Dense liquid droplets as a step source for the crystallization of lumazine synthase. *Journal of Crystal Growth*, **2005**, 275, e1409-e1416	1.6	19
57	Multiple extrema in the intermolecular potential and the phase diagram of protein solutions. *Physical Review E*, **2006**, 73, 061917	2.4	18
56	Miniaturized scintillation technique for protein solubility determinations. *Review of Scientific Instruments*, **1999**, 70, 2845-2849	1.7	18
55	Probing the Twisted Structure of Sickle Hemoglobin Fibers via Particle Simulations. *Biophysical Journal*, **2016**, 110, 2085-93	2.9	18
54	Antagonistic cooperativity between crystal growth modifiers. *Nature*, **2020**, 577, 497-501	50.4	17
53	Mesoscopic Solute-Rich Clusters in Olanzapine Solutions. *Crystal Growth and Design*, **2017**, 17, 6668-6676	3.5	16
52	Stable equidistant step trains during crystallization of insulin. *Physical Review Letters*, **2003**, 90, 225503	7.4	16

51	Polymorphism of Lysozyme Condensates. *Journal of Physical Chemistry B*, **2017**, 121, 9091-9101	3.4	15
50	Control of the nucleation of sickle cell hemoglobin polymers by free hematin. *Faraday Discussions*, **2012**, 159, 87	3.6	15
49	Protein Conformational Flexibility Enables the Formation of Dense Liquid Clusters: Tests Using Solution Shear. *Journal of Physical Chemistry Letters*, **2016**, 7, 2339-45	6.4	14
48	Growth of Large Hematin Crystals in Biomimetic Solutions. *Crystal Growth and Design*, **2014**, 14, 2123-2127	3.5	14
47	Shear flow suppresses the volume of the nucleation precursor clusters in lysozyme solutions. *Journal of Crystal Growth*, **2017**, 468, 493-501	1.6	13
46	Nonclassical Nucleation. *ACS Symposium Series*, **2020**, 19-46	0.4	13
45	Does Solution Viscosity Scale the Rate of Aggregation of Folded Proteins?. *Journal of Physical Chemistry Letters*, **2012**, 3, 1258-63	6.4	12
44	Metastable mesoscopic phases in concentrated protein solutions. *Annals of the New York Academy of Sciences*, **2009**, 1161, 377-86	6.5	12
43	Differential pathways in oxy and deoxy HbC aggregation/crystallization. *Proteins: Structure, Function and Bioinformatics*, **2001**, 42, 99-107	4.2	12
42	Finite-amplitude instability in growth step trains with overlapping step supply fields. *Physical Review E*, **1999**, 59, 3155-3164	2.4	12
41	Olanzapine crystal symmetry originates in preformed centrosymmetric solute dimers. *Nature Chemistry*, **2020**, 12, 914-920	17.6	12
40	Lipid or aqueous medium for hematin crystallization?. *CrystEngComm*, **2015**, 17, 7790-7800	3.3	11
39	Quantitative prediction of erythrocyte sickling for the development of advanced sickle cell therapies. *Science Advances*, **2019**, 5, eaax3905	14.3	11
38	Dissipating step bunches during crystallization under transport control. *Physical Review E*, **2003**, 67, 031606	2.4	11
37	Differential phase-shifting interferometry for in situ surface characterization during solution growth of crystals. *Review of Scientific Instruments*, **2002**, 73, 3540-3545	1.7	11
36	Steady, Symmetric, and Reversible Growth and Dissolution of Individual Amyloid-Fibrils. *ACS Chemical Neuroscience*, **2019**, 10, 2967-2976	5.7	10
35	Early Onset of Kinetic Roughening due to a Finite Step Width in Hematin Crystallization. *Physical Review Letters*, **2017**, 119, 198101	7.4	10
34	Free heme in micromolar amounts enhances the attraction between sickle cell hemoglobin molecules. *Biopolymers*, **2009**, 91, 1108-16	2.2	10

33	Interactions of hemin with model erythrocyte membranes. *Journal of Physical Chemistry B*, **2010**, 114, 4529-35	3.4	9
32	Nucleation of protein condensed phases. *Reviews in Chemical Engineering*, **2011**, 27, 1-13	5	9
31	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, 882-8	6.5	9
30	Real time, in-situ, monitoring of apoferritin crystallization and defect formation with molecular resolution. *Journal of Crystal Growth*, **2001**, 232, 188-194	1.6	9
29	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,	11.5	9
28	Characterization of the diffusive dynamics of particles with time-dependent asymmetric microscopy intensity profiles. *Soft Matter*, **2016**, 12, 6926-36	3.6	9
27	Deconstructing Quinoline-Class Antimalarials to Identify Fundamental Physicochemical Properties of Beta-Hematin Crystal Growth Inhibitors. *Chemistry - A European Journal*, **2017**, 23, 13638-13647	4.8	8
26	Differential dynamic microscopy of bidisperse colloidal suspensions. *Npj Microgravity*, **2017**, 3, 21	5.3	8
25	Biomimetic Assay for Hematin Crystallization Inhibitors: A New Platform To Screen Antimalarial Drugs. *Crystal Growth and Design*, **2017**, 17, 197-206	3.5	7
24	A second mechanism employed by artemisinins to suppress Plasmodium falciparum hinges on inhibition of hematin crystallization. *Journal of Biological Chemistry*, **2021**, 296, 100123	5.4	7
23	Thermodynamic mechanism of free heme action on sickle cell hemoglobin polymerization. *AICHE Journal*, **2015**, 61, 2861-2870	3.6	6
22	Nucleation and Growth Mechanisms of Protein Crystals **2015**, 795-871		6
21	Nucleation of Crystals in Solution **2010**,		6
20	Structuring of Organic Solvents at Solid Interfaces and Ramifications for Antimalarial Adsorption on □Hematin Crystals. *ACS Applied Materials & Interfaces*, **2018**, 10, 29288-29298	9.5	5
19	Molecular mechanisms of defect formation. *Methods in Enzymology*, **2003**, 368, 170-88	1.7	5
18	Spatiotemporal Step Patterns during Crystal Growth in a Transport-Controlled System. *Journal of Physical Chemistry B*, **2002**, 106, 11800-11804	3.4	5
17	Shape change in crystallization of biological macromolecules. *MRS Bulletin*, **2016**, 41, 375-380	3.2	5
16	The Two-Step Mechanism and The Solution-Crystal Spinodal for Nucleation of Crystals in Solution. *Advances in Chemical Physics*,79-109		5

15	Phase separation and crystallization of hemoglobin C in transgenic mouse and human erythrocytes. *Biophysical Journal*, **2008**, 95, 4025-33	2.9	4
14	Incorporation at Kinks: Kink Density and Activation Barriers. *AIP Conference Proceedings*, **2007**,	0	4
13	Kinetics and mechanisms of protein crystallization at the molecular level. *Methods in Molecular Biology*, **2005**, 300, 15-52	1.4	4
12	Localized generation of attoliter protein solution droplets by electrofocused liquid-liquid separation. *Journal of Physical Chemistry B*, **2009**, 113, 7340-6	3.4	3
11	Mesoscopic Liquid Clusters Represent a Distinct Condensate of Mutant p53		3
10	Chemical engineers and the fundamental understanding of human disease. *AICHE Journal*, **2008**, 54, 2508-2515	3.6	2
9	Nucleation and crystal growth of hemoglobins. The case of HbC. *Methods in Molecular Medicine*, **2003**, 82, 155-76		2
8	Attraction between Permanent Dipoles and London Dispersion Forces Dominate the Thermodynamics of Organic Crystallization. *Crystal Growth and Design*, **2020**, 20, 7429-7438	3.5	2
7	Crystallization of Proteins **2019**, 414-459		1
6	The Ambiguous Functions of the Precursors That Enable Nonclassical Modes of Olanzapine Nucleation and Growth. *Crystals*, **2021**, 11, 738	2.3	1
5	Two-Step Crystal Nucleation Is Selected Because of a Lower Surface Free Energy Barrier. *Crystal Growth and Design*, **2021**, 21, 5394-5402	3.5	1
4	Dual Mode of Action of Organic Crystal Growth Inhibitors. *Crystal Growth and Design*, **2021**, 21, 7053-7064	3.5	0
3	Solvent Structure and Dynamics near the Surfaces of □Hematin Crystals. *Journal of Physical Chemistry B*, **2021**, 125, 11264-11274	3.4	0
2	Bonding of SU-8 to glass for gastight picoliter reactors allowingin situoptical observation. *Journal of Micromechanics and Microengineering*, **2013**, 23, 105003	2	
1	Spatio-Temporal Patterns in Ferritin Crystal Growth. *Materials Research Society Symposia Proceedings*, **2002**, 724, N7.18.1		