Richard A Vaia

List of Publications by Citations

94 papers	9,351 citations	38 h-index	96 g-index
97 ext. papers	10,151 ext. citations	8.5 avg, IF	6.25 L-index

#	Paper	IF	Citations
94	Synthesis and properties of two-dimensional nanostructures by direct intercalation of polymer melts in layered silicates. *Chemistry of Materials*, **1993**, 5, 1694-1696	9.6	1018
93	Polymer Melt Intercalation in Organically-Modified Layered Silicates:Model Predictions and Experiment. *Macromolecules*, **1997**, 30, 8000-8009	5.5	893
92	Structure and Dynamics of Polymer-Layered Silicate Nanocomposites. *Chemistry of Materials*, **1996**, 8, 1728-1734	9.6	802
91	Lattice Model of Polymer Melt Intercalation in Organically-Modified Layered Silicates. *Macromolecules*, **1997**, 30, 7990-7999	5.5	736
90	Polymer Nanocomposites. *MRS Bulletin*, **2007**, 32, 314-322	3.2	544
89	Microstructural Evolution of Melt Intercalated PolymerOrganically Modified Layered Silicates Nanocomposites. *Chemistry of Materials*, **1996**, 8, 2628-2635	9.6	467
88	Synthesis, Structure, and Properties of PBO/SWNT Composites&. *Macromolecules*, **2002**, 35, 9039-9043	5.5	415
87	50th Anniversary Perspective: Are Polymer Nanocomposites Practical for Applications?. *Macromolecules*, **2017**, 50, 714-731	5.5	375
86	Deformationorphology correlations in electrically conductive carbon nanotubehermoplastic polyurethane nanocomposites. *Polymer*, **2005**, 46, 4405-4420	3.9	297
85	Relaxations of confined chains in polymer nanocomposites: Glass transition properties of poly(ethylene oxide) intercalated in montmorillonite. *Journal of Polymer Science, Part B: Polymer Physics*, **1997**, 35, 59-67	2.6	294
84	Thermoset-Layered Silicate Nanocomposites. Quaternary Ammonium Montmorillonite with Primary Diamine Cured Epoxies. *Chemistry of Materials*, **2000**, 12, 3376-3384	9.6	259
83	Mechanism for Liquid Phase Exfoliation of MoS2. *Chemistry of Materials*, **2016**, 28, 337-348	9.6	254
82	Depletion-induced shape and size selection of gold nanoparticles. *Nano Letters*, **2010**, 10, 1433-9	11.5	209
81	Polymer nanocomposites. *Journal of Polymer Science, Part B: Polymer Physics*, **2007**, 45, 3252-3256	2.6	204
80	Assemblies of Titanium Dioxide-Polystyrene Hybrid Nanoparticles for Dielectric Applications. *Chemistry of Materials*, **2010**, 22, 1749-1759	9.6	145
79	Growth Mechanism of Gold Nanorods. *Chemistry of Materials*, **2013**, 25, 555-563	9.6	143
78	Hairy nanoparticle assemblies as one-component functional polymer nanocomposites: opportunities and challenges. *MRS Communications*, **2013**, 3, 13-29	2.7	138

77	Nanolaminates: increasing dielectric breakdown strength of composites. *ACS Applied Materials & Interfaces*, **2012**, 4, 1388-96	9.5	116
76	Control over position, orientation, and spacing of arrays of gold nanorods using chemically nanopatterned surfaces and tailored particle-particle-surface interactions. *ACS Nano*, **2012**, 6, 5693-701	16.7	114
75	X-ray powder diffraction of polymer/layered silicate nanocomposites: Model and practice. *Journal of Polymer Science, Part B: Polymer Physics*, **2002**, 40, 1590-1600	2.6	113
74	Does shape matter? Bioeffects of gold nanomaterials in a human skin cell model. *Langmuir*, **2012**, 28, 3248-58	4	101
73	Plasmon-induced transparency in the visible region via self-assembled gold nanorod heterodimers. *Nano Letters*, **2013**, 13, 6287-91	11.5	87
72	Nanoscale Ionic Materials. *Chemistry of Materials*, **2014**, 26, 84-96	9.6	72
71	Dielectric breakdown in silica-amorphous polymer nanocomposite films: the role of the polymer matrix. *ACS Applied Materials & Interfaces*, **2013**, 5, 5486-92	9.5	71
70	Performance of dielectric nanocomposites: matrix-free, hairy nanoparticle assemblies and amorphous polymer-nanoparticle blends. *ACS Applied Materials & Interfaces*, **2014**, 6, 21500-9	9.5	67
69	Montmorillonite-thermoset nanocomposites via cryo-compounding. *Polymer*, **2006**, 47, 3426-3435	3.9	63
68	Ag shell morphology on Au nanorod core: role of Ag precursor complex. *Journal of Materials Chemistry*, **2011**, 21, 15608		60
67	Origami mechanologic. *Proceedings of the National Academy of Sciences of the United States of America*, **2018**, 115, 6916-6921	11.5	60
66	Engineering the Optical Properties of Gold Nanorods: Independent Tuning of Surface Plasmon Energy, Extinction Coefficient, and Scattering Cross Section. *Journal of Physical Chemistry C*, **2014**, 118, 5918-5926	3.8	57
65	Nonisotropic Self-Organization of Single-Component Hairy Nanoparticle Assemblies. *ACS Macro Letters*, **2013**, 2, 670-676	6.6	57
64	In Situ UV/Vis, SAXS, and TEM Study of Single-Phase Gold Nanoparticle Growth. *Chemistry of Materials*, **2012**, 24, 981-995	9.6	56
63	High-yield assembly of soluble and stable gold nanorod pairs for high-temperature plasmonics. *Small*, **2012**, 8, 1013-20	11	53
62	Dynamic Plasmonic Pixels. *ACS Nano*, **2019**, 13, 3875-3883	16.7	51
61	Self-Passivation of Polymer-Layered Silicate Nanocomposites. *Chemistry of Materials*, **2001**, 13, 4123-4129	9.6	50
60	Shape-reprogrammable polymers: encoding, erasing, and re-encoding. *Advanced Materials*, **2014**, 26, 8114-9	24	48

59	Redox Exfoliation of Layered Transition Metal Dichalcogenides. *ACS Nano*, **2017**, 11, 635-646	16.7	45
58	Nonlinear chiro-optical amplification by plasmonic nanolens arrays formed via directed assembly of gold nanoparticles. *Nano Letters*, **2015**, 15, 1836-42	11.5	44
57	Highly Concentrated Seed-Mediated Synthesis of Monodispersed Gold Nanorods. *ACS Applied Materials & Interfaces*, **2017**, 9, 26363-26371	9.5	41
56	Plasmonic resonances in self-assembled reduced symmetry gold nanorod structures. *Nano Letters*, **2013**, 13, 2220-5	11.5	38
55	Halogen Etch of TiAlC MAX Phase for MXene Fabrication. *ACS Nano*, **2021**, 15, 2771-2777	16.7	37
54	Extreme Energy Absorption in Glassy Polymer Thin Films by Supersonic Micro-projectile Impact. *Materials Today*, **2018**, 21, 817-824	21.8	32
53	Deformation Behavior of Polystyrene-Grafted Nanoparticle Assemblies with Low Grafting Density. *Macromolecules*, **2018**, 51, 7257-7265	5.5	32
52	Origami Actuator Design and Networking Through Crease Topology Optimization. *Journal of Mechanical Design, Transactions of the ASME*, **2015**, 137,	3	29
51	Distribution in the Grafting Density of End-Functionalized Polymer Chains Adsorbed onto Nanoparticle Surfaces. *Macromolecules*, **2012**, 45, 7649-7659	5.5	29
50	Dielectric performance of high permitivity nanocomposites: impact of polystyrene grafting on BaTiO3 and TiO2. *Nanocomposites*, **2016**, 2, 117-124	3.4	28
49	Electrical Control of Shape in Voxelated Liquid Crystalline Polymer Nanocomposites. *ACS Applied Materials & Interfaces*, **2018**, 10, 1187-1194	9.5	28
48	Designed Autonomic Motion in Heterogeneous Belousov□Zhabotinsky (BZ)-Gelatin Composites by Synchronicity. *Advanced Functional Materials*, **2013**, 23, 2835-2842	15.6	27
47	Preparation of Ordered Monolayers of Polymer Grafted Nanoparticles: Impact of Architecture, Concentration, and Substrate Surface Energy. *Macromolecules*, **2016**, 49, 1834-1847	5.5	26
46	Deterministic Construction of Plasmonic Heterostructures in Well-Organized Arrays for Nanophotonic Materials. *Advanced Materials*, **2015**, 27, 7314-9	24	26
45	Physical aging and glass transition of hairy nanoparticle assemblies. *Journal of Polymer Science, Part B: Polymer Physics*, **2016**, 54, 319-330	2.6	23
44	Electron-Withdrawing Effect of Native Terminal Groups on the Lattice Structure of Ti3C2Tx MXenes Studied by Resonance Raman Scattering: Implications for Embedding MXenes in Electronic Composites. *ACS Applied Nano Materials*, **2019**, 2, 6087-6091	5.6	22
43	Stability of Polymer Grafted Nanoparticle Monolayers: Impact of Architecture and Polymer□Substrate Interactions on Dewetting. *ACS Macro Letters*, **2016**, 5, 1369-1374	6.6	21
42	Optimizing Seed Aging for Single Crystal Gold Nanorod Growth: The Critical Role of Gold Nanocluster Crystal Structure. *Journal of Physical Chemistry C*, **2016**, 120, 28235-28245	3.8	19

41	Autonomous Motility of Polymer Films. *Advanced Materials*, **2018**, 30, 1705616	24	17
40	Mini Monomer Encapsulated Emulsion Polymerization of PMMA Using Aqueous ARGET ATRP. *ACS Macro Letters*, **2018**, 7, 459-463	6.6	17
39	The effects of nanoparticle shape and orientation on the low frequency dielectric properties of nanocomposites. *Journal of Materials Science*, **2012**, 47, 4914-4920	4.3	17
38	Purification–chemical structure–electrical property relationship in gold nanoparticle liquids. *Applied Organometallic Chemistry*, **2010**, 24, 590-599	3.1	17
37	Widely Tunable Infrared Plasmonic Nanoantennas Using Directed Assembly. *Advanced Optical Materials*, **2017**, 5, 1700335	8.1	16
36	Belousov-Zhabotinsky autonomic hydrogel composites: Regulating waves via asymmetry. *Science Advances*, **2016**, 2, e1600813	14.3	16
35	Mechanical computing. *Nature*, **2021**, 598, 39-48	50.4	15
34	Toward Architected Nanocomposites: MXenes and Beyond. *ACS Nano*, **2021**, 15, 21-28	16.7	14
33	Mechanism for Redox Exfoliation of Layered Transition Metal Dichalcogenides. *Chemistry of Materials*, **2020**, 32, 6550-6565	9.6	13
32	Hygromorphic Polymers: Synthesis, Retro-Michael Reaction, and Humidity-Driven Actuation of Ester–Sulfonyl Polyimides and Thermally Derived Copolyimides. *Macromolecules*, **2016**, 49, 3286-3299	5.5	12
31	Nonlinear Optical Interactions and Relaxation in 2D Layered Transition Metal Dichalcogenides Probed by Optical and Photoacoustic Z-Scan Methods. *ACS Photonics*, **2020**, 7, 3440-3447	6.3	11
30	Uniaxial Deformation and Crazing in Glassy Polymer-Grafted Nanoparticle Ultrathin Films. *ACS Nano* , **2019**, 13, 12816-12829	16.7	11
29	Femtosecond Nonlinear Optical Properties of 2D Metallic NbS2 in the Near Infrared. *Journal of Physical Chemistry C*, **2020**, 124, 15425-15433	3.8	10
28	Synchronicity in composite hydrogels: Belousov-Zhabotinsky (BZ) active nodes in gelatin. *Journal of Physical Chemistry B*, **2015**, 119, 3595-602	3.4	10
27	Role of solvent selectivity in the equilibrium surface composition of monolayers formed from a solution containing mixtures of organic thiols. *Langmuir*, **2010**, 26, 11991-7	4	9
26	Projectile Impact Shock-Induced Deformation of One-Component Polymer Nanocomposite Thin Films. *ACS Nano*, **2021**, 15, 2439-2446	16.7	9
25	Enhancing dielectric breakdown strength: structural relaxation of amorphous polymers and nanocomposites. *MRS Communications*, **2015**, 5, 205-210	2.7	8
24	Femtosecond nonlinear refraction of 2D semi-metallic redox exfoliated ZrTe2 at 800 nm. *Applied Physics Letters*, **2021**, 118, 011101	3.4	8

23	Monolayer 2D ZrTe transition metal dichalcogenide as nanoscatter for random laser action. *Nanoscale*, **2020**, 12, 15706-15710	7.7	7
22	Anomalous peaks in grazing incidence thin film X-ray diffraction. *Powder Diffraction*, **1994**, 9, 44-49	1.8	7
21	Belousov-Zhabotinsky Hydrogels: Relationship between Hydrogel Structure and Mechanical Response. *Chemistry of Materials*, **2015**, 27, 5782-5790	9.6	6
20	Inverted OPVs with MoS2 hole transport layer deposited by spray coating. *Materials Today Energy*, **2017**, 5, 107-111	7	6
19	Simultaneous Ultrafast Transmission and Reflection of Nanometer-Thick Ti3C2Tx MXene Films in the Visible and Near-Infrared: Implications for Energy Storage, Electromagnetic Shielding, and Laser Systems. *ACS Applied Nano Materials*, **2020**, 3, 9604-9609	5.6	6
18	Microscopic Characterization of Fracture Mechanisms in Polystyrene Grafted Nanoparticle Assemblies: The Role of Film Thickness and Grafting Density. *Microscopy and Microanalysis*, **2016**, 22, 1856-1857	0.5	6
17	Deep Learning of Binary Solution Phase Behavior of Polystyrene.. *ACS Macro Letters*, **2021**, 10, 749-754	6.6	5
16	Fifth-order optical nonlinear response of semiconducting 2D LTMD MoS. *Optics Letters*, **2021**, 46, 226-229		5
15	Low-energy, nanoparticle reshaping for large-area, patterned, plasmonic nanocomposites. *Journal of Materials Chemistry C*, **2018**, 6, 7157-7169	7.1	4
14	Ultrasensitive Molecular Sensors Based on Real-Time Impedance Spectroscopy in Solution-Processed 2D Materials. *Advanced Functional Materials*,2106830	15.6	4
13	Surface Functionalization of TiCT MXene Nanosheets with Catechols: Implication for Colloidal Processing. *Langmuir*, **2021**, 37, 5447-5456	4	4
12	Reversibly Tailoring Optical Constants of Monolayer Transition Metal Dichalcogenide MoS2 Films: Impact of Dopant-Induced Screening from Chemical Adsorbates and Mild Film Degradation. *ACS Photonics*, **2021**, 8, 1705-1717	6.3	4
11	Relaxations of confined chains in polymer nanocomposites: Glass transition properties of poly(ethylene oxide) intercalated in montmorillonite **1997**, 35, 59		4
10	Coexistence and Phase Behavior of Solvent-Polystyrene-Grafted Gold Nanoparticle Systems. *Macromolecules*,	5.5	3
9	Polarized X-ray scattering measures molecular orientation in polymer-grafted nanoparticles. *Nature Communications*, **2021**, 12, 4896	17.4	3
8	Toward an Alkahest Canopy for Gold Nanorod Stability in Water and Organic Solvents. *Journal of Physical Chemistry C*, **2020**, 124, 11730-11739	3.8	2
7	In Situ Study of Mechanical Testing and Fracture Process of Glassy Polystyrene Grafted Nanoparticle Assembly: Impact of Film Thickness and Strain Rate. *Microscopy and Microanalysis*, **2017**, 23, 796-797	0.5	1
6	Divergent Properties in Structural Isomers of Triphenylamine-Based Covalent Organic Frameworks. *Chemistry of Materials*, **2022**, 34, 529-536	9.6	1

5	Nonlinear Absorption and Optical Limiting Effect in Redox Exfoliated Layered Transition Metal Dichalcogenides **2018**,		1
4	Hyper-Rayleigh scattering in 2D redox exfoliated semi-metallic ZrTe transition metal dichalcogenide. *Physical Chemistry Chemical Physics*, **2020**, 22, 27845-27849	3.6	1
3	Resolving Electron-Electron Scattering in Plasmonic Nanorod Ensembles Using Two-Dimensional Electronic Spectroscopy. *Nano Letters*, **2020**, 20, 7722-7727	11.5	1
2	Tuning Hierarchical Order and Plasmonic Coupling of Large-Area, Polymer-Grafted Gold Nanorod Assemblies via Flow-Coating. *ACS Applied Materials & Interfaces*, **2021**, 13, 27445-27457	9.5	1
1	Self-limiting gold nanoparticle surface assemblies through modulation of pH and ionic strength. *Journal of Nanoparticle Research*, **2018**, 20, 1	2.3	1