

Akshay Rao

List of Publications by Year in descending order

Source: <https://exaly.com/author-pdf/9221557/publications.pdf>

Version: 2024-02-01

103
papers

10,050
citations

61945

43
h-index

34964

98
g-index

107
all docs

107
docs citations

107
times ranked

9027
citing authors

#	ARTICLE	IF	CITATIONS
1	Singlet Fission: Mechanisms and Molecular Design. , 2022, , 291-311.		2
2	Nanoscale chemical heterogeneity dominates the optoelectronic response of alloyed perovskite solar cells. Nature Nanotechnology, 2022, 17, 190-196.	15.6	75
3	Ultrafast exciton transport at early times in quantum dot solids. Nature Materials, 2022, 21, 533-539.	13.3	38
4	Extracting quantitative dielectric properties from pump-probe spectroscopy. Nature Communications, 2022, 13, 1437.	5.8	16
5	Deoxyribonucleic Acid Encoded and Size-Defined π -Stacking of Perylene Diimides. Journal of the American Chemical Society, 2022, 144, 368-376.	6.6	15
6	Insights into the Structure and Self-Assembly of Organic Semiconductor/Quantum Dot Blends. Advanced Functional Materials, 2022, 32, 2109252.	7.8	2
7	Tuning the Coherent Propagation of Organic Exciton Polaritons through Dark State Delocalization. Advanced Science, 2022, 9, e2105569.	5.6	38
8	Elucidating the Role of Antisolvents on the Surface Chemistry and Optoelectronic Properties of CsPbBr _{3-x} Perovskite Nanocrystals. Journal of the American Chemical Society, 2022, 144, 12102-12115.	6.6	31
9	Ultrafast melting and recovery of collective order in the excitonic insulator Ta ₂ NiSe ₅ . Nature Communications, 2021, 12, 1699.	5.8	28
10	Efficient Energy Funneling in Spatially Tailored Segmented Conjugated Block Copolymer Nanofiber-Quantum Dot or Rod Conjugates. Journal of the American Chemical Society, 2021, 143, 7032-7041.	6.6	25
11	Exciton Diffusion in Highly-Ordered One Dimensional Conjugated Polymers: Effects of Back-Bone Torsion, Electronic Symmetry, Phonons and Annihilation. Journal of Physical Chemistry Letters, 2021, 12, 3669-3678.	2.1	12
12	Rational Passivation of Sulfur Vacancy Defects in Two-Dimensional Transition Metal Dichalcogenides. ACS Nano, 2021, 15, 8780-8789.	7.3	52
13	Photon upconversion through triplet exciton-mediated energy relay. Nature Communications, 2021, 12, 3704.	5.8	38
14	Operando optical tracking of single-particle ion dynamics in batteries. Nature, 2021, 594, 522-528.	13.7	121
15	Imaging the coherent propagation of collective modes in the excitonic insulator Ta ₂ NiSe ₅ at room temperature. Science Advances, 2021, 7, .	4.7	29
16	Pentacene-Bridge Interactions in an Axially Chiral Binaphthyl Pentacene Dimer. Journal of Physical Chemistry A, 2021, 125, 7226-7234.	1.1	7
17	Efficient energy transport in an organic semiconductor mediated by transient exciton delocalization. Science Advances, 2021, 7, .	4.7	68
18	Organic-quantum dot hybrid interfaces and their role in photon fission/fusion applications. Chemical Physics Reviews, 2021, 2, 031305.	2.6	17

#	ARTICLE	IF	CITATIONS
19	The role of charge recombination to triplet excitons in organic solar cells. <i>Nature</i> , 2021, 597, 666-671.	13.7	225
20	Giant photoluminescence enhancement in MoSe ₂ monolayers treated with oleic acid ligands. <i>Nanoscale Advances</i> , 2021, 3, 4216-4225.	2.2	14
21	Untargeted effects in organic exciton-polariton transient spectroscopy: A cautionary tale. <i>Journal of Chemical Physics</i> , 2021, 155, 154701.	1.2	24
22	Mechanistic insight into the chemical treatments of monolayer transition metal disulfides for photoluminescence enhancement. <i>Nature Communications</i> , 2021, 12, 6044.	5.8	17
23	Nonequilibrium Carrier Transport in Quantum Dot Heterostructures. <i>Nano Letters</i> , 2021, 21, 8945-8951.	4.5	13
24	Microcavity-like exciton-polaritons can be the primary photoexcitation in bare organic semiconductors. <i>Nature Communications</i> , 2021, 12, 6519.	5.8	32
25	Long-range ballistic propagation of carriers in methylammonium lead iodide perovskite thin films. <i>Nature Physics</i> , 2020, 16, 171-176.	6.5	94
26	Directed Energy Transfer from Monolayer WS ₂ to Near-Infrared Emitting PbS/CdS Quantum Dots. <i>ACS Nano</i> , 2020, 14, 15374-15384.	7.3	28
27	Optical and Electronic Properties of Colloidal CdSe Quantum Rings. <i>ACS Nano</i> , 2020, 14, 14740-14760.	7.3	8
28	Emission State Structure and Linewidth Broadening Mechanisms in Type-II CdSe/CdTe Core-Crown Nanoplatelets: A Combined Theoretical/Single Nanocrystal Optical Study. <i>Journal of Physical Chemistry C</i> , 2020, 124, 17352-17363.	1.5	13
29	Lanthanide-doped inorganic nanoparticles turn molecular triplet excitons bright. <i>Nature</i> , 2020, 587, 594-599.	13.7	135
30	Controlling the structures of organic semiconductor-quantum dot nanocomposites through ligand shell chemistry. <i>Soft Matter</i> , 2020, 16, 7970-7981.	1.2	4
31	Optical Projection and Spatial Separation of Spin-Entangled Triplet Pairs from the S ₁ (21 Ag ⁺) State of Pi-Conjugated Systems. <i>CheM</i> , 2020, 6, 2826-2851.	5.8	15
32	Impact of exciton delocalization on exciton-vibration interactions in organic semiconductors. <i>Physical Review B</i> , 2020, 102, .	1.1	36
33	First principles modeling of exciton-polaritons in polydiacetylene chains. <i>Journal of Chemical Physics</i> , 2020, 153, 084103.	1.2	14
34	Thiol-Anchored TIPS-Tetracene Ligands with Quantitative Triplet Energy Transfer to PbS Quantum Dots and Improved Thermal Stability. <i>Journal of Physical Chemistry Letters</i> , 2020, 11, 7239-7244.	2.1	11
35	Enhanced Ballistic Transport of Charge Carriers in Alloyed and K-Passivated Alloyed Perovskite Thin Films. <i>Journal of Physical Chemistry Letters</i> , 2020, 11, 5402-5406.	2.1	8
36	Direct vs Delayed Triplet Energy Transfer from Organic Semiconductors to Quantum Dots and Implications for Luminescent Harvesting of Triplet Excitons. <i>ACS Nano</i> , 2020, 14, 4224-4234.	7.3	33

#	ARTICLE	IF	CITATIONS
37	Femtosecond Transient Absorption Microscopy of Singlet Exciton Motion in Side-Chain Engineered Perylene-Diimide Thin Films. <i>Journal of Physical Chemistry A</i> , 2020, 124, 2721-2730.	1.1	23
38	Excitation Dynamics in Layered Lead Halide Perovskite Crystal Slabs and Microcavities. <i>ACS Photonics</i> , 2020, 7, 845-852.	3.2	16
39	Enhancing Photoluminescence and Mobilities in WS ₂ Monolayers with Oleic Acid Ligands. <i>Nano Letters</i> , 2019, 19, 6299-6307.	4.5	80
40	Exploiting Excited-State Aromaticity To Design Highly Stable Singlet Fission Materials. <i>Journal of the American Chemical Society</i> , 2019, 141, 13867-13876.	6.6	104
41	Engineering Molecular Ligand Shells on Quantum Dots for Quantitative Harvesting of Triplet Excitons Generated by Singlet Fission. <i>Journal of the American Chemical Society</i> , 2019, 141, 12907-12915.	6.6	48
42	Ligand Shell Structure in Lead Sulfide "Oleic Acid Colloidal Quantum Dots Revealed by Small-Angle Scattering. <i>Journal of Physical Chemistry Letters</i> , 2019, 10, 4713-4719.	2.1	32
43	Ultrafast Tracking of Exciton and Charge Carrier Transport in Optoelectronic Materials on the Nanometer Scale. <i>Journal of Physical Chemistry Letters</i> , 2019, 10, 6727-6733.	2.1	42
44	Scan Strategies for Electron Energy Loss Spectroscopy at Optical and Vibrational Energies in Perylene Diimide Nanobelts. <i>Microscopy and Microanalysis</i> , 2019, 25, 1738-1739.	0.2	1
45	Photon Upconversion from Near-Infrared to Blue Light with TIPS-Anthracene as an Efficient Triplet-Triplet Annihilator. , 2019, 1, 660-664.		68
46	Singlet exciton fission via an intermolecular charge transfer state in coevaporated pentacene-perfluoropentacene thin films. <i>Journal of Chemical Physics</i> , 2019, 151, 164706.	1.2	22
47	All-Optical Detection of Neuronal Membrane Depolarization in Live Cells Using Colloidal Quantum Dots. <i>Nano Letters</i> , 2019, 19, 8539-8549.	4.5	27
48	Fine Structure and Spin Dynamics of Linearly Polarized Indirect Excitons in Two-Dimensional CdSe/CdTe Colloidal Heterostructures. <i>ACS Nano</i> , 2019, 13, 10140-10153.	7.3	18
49	A molecular movie of ultrafast singlet fission. <i>Nature Communications</i> , 2019, 10, 4207.	5.8	54
50	Improving the photoluminescence quantum yields of quantum dot films through a donor/acceptor system for near-IR LEDs. <i>Materials Horizons</i> , 2019, 6, 137-143.	6.4	20
51	Excimer Formation in Carboxylic Acid-Functionalized Perylene Diimides Attached to Silicon Dioxide Nanoparticles. <i>Journal of Physical Chemistry C</i> , 2019, 123, 3433-3440.	1.5	20
52	Excited-State Dynamics in Fully Conjugated 2D Covalent Organic Frameworks. <i>Journal of the American Chemical Society</i> , 2019, 141, 11565-11571.	6.6	89
53	Shaky lattices for light-matter interactions. <i>Nature Materials</i> , 2019, 18, 307-308.	13.3	0
54	Photon upconversion utilizing energy beyond the band gap of crystalline silicon with a hybrid TES-ADT/PbS quantum dots system. <i>Chemical Science</i> , 2019, 10, 4750-4760.	3.7	47

#	ARTICLE	IF	CITATIONS
55	Slow Carrier Cooling in Hybrid Pb/Sn Halide Perovskites. <i>ACS Energy Letters</i> , 2019, 4, 736-740.	8.8	36
56	Chain Coupling and Luminescence in High-Mobility, Low-Disorder Conjugated Polymers. <i>ACS Nano</i> , 2019, 13, 13716-13727.	7.3	7
57	Singlet Fission and Triplet Transfer to PbS Quantum Dots in TIPS-Tetracene Carboxylic Acid Ligands. <i>Journal of Physical Chemistry Letters</i> , 2018, 9, 1454-1460.	2.1	53
58	Hybridizing semiconductor nanocrystals with metal-organic frameworks for visible and near-infrared photon upconversion. <i>Dalton Transactions</i> , 2018, 47, 8590-8594.	1.6	28
59	Order enables efficient electron-hole separation at an organic heterojunction with a small energy loss. <i>Nature Communications</i> , 2018, 9, 277.	5.8	112
60	Elucidation of Excitation Energy Dependent Correlated Triplet Pair Formation Pathways in an Endothermic Singlet Fission System. <i>Journal of the American Chemical Society</i> , 2018, 140, 4613-4622.	6.6	32
61	Ultrafast Dynamics of Polariton Cooling and Renormalization in an Organic Single-Crystal Microcavity under Nonresonant Pumping. <i>ACS Photonics</i> , 2018, 5, 2182-2188.	3.2	21
62	Exciton-Phonon Interactions Govern Charge-Transfer-State Dynamics in CdSe/CdTe Two-Dimensional Colloidal Heterostructures. <i>Journal of the American Chemical Society</i> , 2018, 140, 14097-14111.	6.6	30
63	The Potential of Singlet Fission Photon Multipliers as an Alternative to Silicon-Based Tandem Solar Cells. <i>ACS Energy Letters</i> , 2018, 3, 2587-2592.	8.8	61
64	Simple and Robust Panchromatic Light Harvesting Antenna Composites via FRET Engineering in Solid State Host Matrices. <i>Journal of Physical Chemistry C</i> , 2018, 122, 22330-22338.	1.5	16
65	Observation of Vibronic-Coupling-Mediated Energy Transfer in Light-Harvesting Nanotubes Stabilized in a Solid-State Matrix. <i>Journal of Physical Chemistry Letters</i> , 2018, 9, 5604-5611.	2.1	15
66	Long-range exciton transport in conjugated polymer nanofibers prepared by seeded growth. <i>Science</i> , 2018, 360, 897-900.	6.0	277
67	All-optical augmentation of solar cells using a combination of up- and downconversion. <i>Journal of Photonics for Energy</i> , 2018, 8, 1.	0.8	11
68	Visualizing excitations at buried heterojunctions in organic semiconductor blends. <i>Nature Materials</i> , 2017, 16, 551-557.	13.3	98
69	Harnessing singlet exciton fission to break the Shockley-Queisser limit. <i>Nature Reviews Materials</i> , 2017, 2, .	23.3	309
70	Real-Time Observation of Exciton-Phonon Coupling Dynamics in Self-Assembled Hybrid Perovskite Quantum Wells. <i>ACS Nano</i> , 2017, 11, 10834-10843.	7.3	181
71	Vibronically coherent ultrafast triplet-pair formation and subsequent thermally activated dissociation control efficient endothermic singlet fission. <i>Nature Chemistry</i> , 2017, 9, 1205-1212.	6.6	184
72	Ultrafast Long-Range Charge Separation in Nonfullerene Organic Solar Cells. <i>ACS Nano</i> , 2017, 11, 12473-12481.	7.3	82

#	ARTICLE	IF	CITATIONS
73	Strongly exchange-coupled triplet pairs in an organic semiconductor. <i>Nature Physics</i> , 2017, 13, 176-181.	6.5	182
74	Charge Generation and Electron-Trapping Dynamics in Hybrid Nanocrystal-Polymer Solar Cells. <i>Journal of Physical Chemistry C</i> , 2016, 120, 19064-19069.	1.5	11
75	What Controls the Rate of Ultrafast Charge Transfer and Charge Separation Efficiency in Organic Photovoltaic Blends. <i>Journal of the American Chemical Society</i> , 2016, 138, 11672-11679.	6.6	179
76	Sub-10 fs Time-Resolved Vibronic Optical Microscopy. <i>Journal of Physical Chemistry Letters</i> , 2016, 7, 4854-4859.	2.1	44
77	Real-time observation of multiexcitonic states in ultrafast singlet fission using coherent 2D electronic spectroscopy. <i>Nature Chemistry</i> , 2016, 8, 16-23.	6.6	308
78	Electroluminescence from Organometallic Lead Halide Perovskite-Conjugated Polymer Diodes. <i>Advanced Electronic Materials</i> , 2015, 1, 1500008.	2.6	62
79	Evidence for conical intersection dynamics mediating ultrafast singlet exciton fission. <i>Nature Physics</i> , 2015, 11, 352-357.	6.5	296
80	Unequal Partnership: Asymmetric Roles of Polymeric Donor and Fullerene Acceptor in Generating Free Charge. <i>Journal of the American Chemical Society</i> , 2014, 136, 2876-2884.	6.6	235
81	Bimolecular Recombination in Organic Photovoltaics. <i>Annual Review of Physical Chemistry</i> , 2014, 65, 557-581.	4.8	218
82	A transferable model for singlet-fission kinetics. <i>Nature Chemistry</i> , 2014, 6, 492-497.	6.6	402
83	Interface limited charge extraction and recombination in organic photovoltaics. <i>Energy and Environmental Science</i> , 2014, 7, 2227.	15.6	33
84	Quantitative Bimolecular Recombination in Organic Photovoltaics through Triplet Exciton Formation. <i>Journal of the American Chemical Society</i> , 2014, 136, 3424-3429.	6.6	93
85	Ultrafast Long-Range Charge Separation in Organic Semiconductor Photovoltaic Diodes. <i>Science</i> , 2014, 343, 512-516.	6.0	807
86	Resonant energy transfer of triplet excitons from pentacene to PbSe nanocrystals. <i>Nature Materials</i> , 2014, 13, 1033-1038.	13.3	246
87	Ultrafast Charge- and Energy-Transfer Dynamics in Conjugated Polymer: Cadmium Selenide Nanocrystal Blends. <i>ACS Nano</i> , 2014, 8, 1647-1654.	7.3	35
88	The role of spin in the kinetic control of recombination in organic photovoltaics. <i>Nature</i> , 2013, 500, 435-439.	13.7	460
89	Temperature-Independent Singlet Exciton Fission in Tetracene. <i>Journal of the American Chemical Society</i> , 2013, 135, 16680-16688.	6.6	198
90	Singlet Exciton Fission in Polycrystalline Pentacene: From Photophysics toward Devices. <i>Accounts of Chemical Research</i> , 2013, 46, 1330-1338.	7.6	230

#	ARTICLE	IF	CITATIONS
91	The Role of Driving Energy and Delocalized States for Charge Separation in Organic Semiconductors. Science, 2012, 335, 1340-1344.	6.0	1,022
92	Exciton Charge Annihilation in Organic Semiconductor Films. Advanced Functional Materials, 2012, 22, 1567-1577.	7.8	99
93	Singlet Exciton Fission-Sensitized Infrared Quantum Dot Solar Cells. Nano Letters, 2012, 12, 1053-1057.	4.5	200
94	Ultrafast Dynamics of Exciton Fission in Polycrystalline Pentacene. Journal of the American Chemical Society, 2011, 133, 11830-11833.	6.6	394
95	Photophysics of pentacene thin films: The role of exciton fission and heating effects. Physical Review B, 2011, 84, .	1.1	114
96	Polymer Blend Solar Cells Based on a High-Mobility Naphthalenediimide-Based Polymer Acceptor: Device Physics, Photophysics and Morphology. Advanced Energy Materials, 2011, 1, 230-240.	10.2	199
97	Exciton Fission and Charge Generation via Triplet Excitons in Pentacene/C ₆₀ Bilayers. Journal of the American Chemical Society, 2010, 132, 12698-12703.	6.6	295
98	Subnanosecond Geminate Charge Recombination in Polymer-Polymer Photovoltaic Devices. Physical Review Letters, 2010, 104, 177701.	2.9	79
99	Long-Range Electrostatics Supercharge Exciton Transport. , 0, , .		0
100	Ultrafast Long-Range Energy Transport via Strong Light-Matter Coupling in Organic Semiconductor Films. , 0, , .		2
101	Energetic Dependence of Triplet Energy Transfer to PbS Quantum Dots for Singlet-Fission Based Photo-multiplication. , 0, , .		0
102	Energetic Dependence of Triplet Energy Transfer to PbS Quantum Dots for Singlet-Fission Based Photo-multiplication. , 0, , .		0
103	Understanding Surface Photovoltage Measurements on Metal Halide Perovskite Bilayers. , 0, , .		0