

Frank C Spano

List of Publications by Year in descending order

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107
papers

13,192
citations

29994

54
h-index

29081

104
g-index

113
all docs

113
docs citations

113
times ranked

9948
citing authors

#	ARTICLE	IF	CITATIONS
1	The Spectral Signatures of Frenkel Polarons in H- and J-Aggregates. <i>Accounts of Chemical Research</i> , 2010, 43, 429-439.	7.6	1,336
2	Expanded Theory of H- and J-Molecular Aggregates: The Effects of Vibronic Coupling and Intermolecular Charge Transfer. <i>Chemical Reviews</i> , 2018, 118, 7069-7163.	23.0	1,033
3	H- and J-Aggregate Behavior in Polymeric Semiconductors. <i>Annual Review of Physical Chemistry</i> , 2014, 65, 477-500.	4.8	834
4	Role of Intermolecular Coupling in the Photophysics of Disordered Organic Semiconductors: Aggregate Emission in Regioregular Polythiophene. <i>Physical Review Letters</i> , 2007, 98, 206406.	2.9	816
5	Modeling disorder in polymer aggregates: The optical spectroscopy of regioregular poly(3-hexylthiophene) thin films. <i>Journal of Chemical Physics</i> , 2005, 122, 234701.	1.2	545
6	Determining exciton bandwidth and film microstructure in polythiophene films using linear absorption spectroscopy. <i>Applied Physics Letters</i> , 2009, 94, .	1.5	492
7	Using coherence to enhance function in chemical and biophysical systems. <i>Nature</i> , 2017, 543, 647-656.	13.7	477
8	Molecular Aggregate Photophysics beyond the Kasha Model: Novel Design Principles for Organic Materials. <i>Accounts of Chemical Research</i> , 2017, 50, 341-350.	7.6	441
9	Cavity-Controlled Chemistry in Molecular Ensembles. <i>Physical Review Letters</i> , 2016, 116, 238301.	2.9	406
10	EXCITONS IN CONJUGATED OLIGOMER AGGREGATES, FILMS, AND CRYSTALS. <i>Annual Review of Physical Chemistry</i> , 2006, 57, 217-243.	4.8	304
11	Superradiance in molecular aggregates. <i>Journal of Chemical Physics</i> , 1989, 91, 683-700.	1.2	260
12	J-Aggregate Behavior in Poly-3-hexylthiophene Nanofibers. <i>Journal of Physical Chemistry Letters</i> , 2012, 3, 259-263.	2.1	258
13	Charge-Transfer Excitations Steer the Davydov Splitting and Mediate Singlet Exciton Fission in Pentacene. <i>Physical Review Letters</i> , 2013, 110, 226402.	2.9	253
14	Determining exciton coherence from the photoluminescence spectral line shape in poly(3-hexylthiophene) thin films. <i>Journal of Chemical Physics</i> , 2009, 130, 074904.	1.2	241
15	Interplay between intrachain and interchain interactions in semiconducting polymer assemblies: The HJ-aggregate model. <i>Journal of Chemical Physics</i> , 2012, 136, 184901.	1.2	234
16	The nature of singlet excitons in oligoacene molecular crystals. <i>Journal of Chemical Physics</i> , 2011, 134, 204703.	1.2	233
17	Exciton Delocalization and Superradiance in Tetracene Thin Films and Nanoaggregates. <i>Physical Review Letters</i> , 2004, 92, 107402.	2.9	228
18	Absorption in regio-regular poly(3-hexyl)thiophene thin films: Fermi resonances, interband coupling and disorder. <i>Chemical Physics</i> , 2006, 325, 22-35.	0.9	195

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19	The Effects of Crystallinity on Charge Transport and the Structure of Sequentially Processed F ₄ TCNQ-Doped Conjugated Polymer Films. <i>Advanced Functional Materials</i> , 2017, 27, 1702654.	7.8	190
20	Vibronic Coupling in J-Aggregates and Beyond: A Direct Means of Determining the Exciton Coherence Length from the Photoluminescence Spectrum. <i>Journal of Physical Chemistry B</i> , 2011, 115, 5133-5143.	1.2	186
21	Absorption and emission in oligo-phenylene vinylene nanoaggregates: The role of disorder and structural defects. <i>Journal of Chemical Physics</i> , 2002, 116, 5877-5891.	1.2	160
22	Interference between Coulombic and CT-mediated couplings in molecular aggregates: H- to J-aggregate transformation in perylene-based π -stacks. <i>Journal of Chemical Physics</i> , 2015, 143, 244707.	1.2	137
23	Analysis of the UV/Vis and CD Spectral Line Shapes of Carotenoid Assemblies: Spectral Signatures of Chiral H-Aggregates. <i>Journal of the American Chemical Society</i> , 2009, 131, 4267-4278.	6.6	117
24	Absorption, Circular Dichroism, and Photoluminescence in Perylene Diimide Bichromophores: Polarization-Dependent H- and J-Aggregate Behavior. <i>Journal of Physical Chemistry B</i> , 2012, 116, 77-86.	1.2	113
25	Probing Excitation Delocalization in Supramolecular Chiral Stacks by Means of Circularly Polarized Light: Experiment and Modeling. <i>Journal of the American Chemical Society</i> , 2007, 129, 7044-7054.	6.6	112
26	The fundamental photophysics of conjugated oligomer herringbone aggregates. <i>Journal of Chemical Physics</i> , 2003, 118, 981-994.	1.2	110
27	Designing J- and H-Aggregates through Wave Function Overlap Engineering: Applications to Poly(3-hexylthiophene). <i>Journal of Physical Chemistry B</i> , 2012, 116, 14494-14503.	1.2	108
28	HJ-Aggregate Behavior of Crystalline 7,8,15,16-Tetraazaterrylene: Introducing a New Design Paradigm for Organic Materials. <i>Journal of Physical Chemistry C</i> , 2014, 118, 28842-28854.	1.5	105
29	Autler-Townes Splitting in Molecular Lithium: Prospects for All-Optical Alignment of Nonpolar Molecules. <i>Physical Review Letters</i> , 1999, 83, 288-291.	2.9	104
30	Optical microcavities enhance the exciton coherence length and eliminate vibronic coupling in J-aggregates. <i>Journal of Chemical Physics</i> , 2015, 142, 184707.	1.2	104
31	Polarized Absorption in Crystalline Pentacene: Theory vs Experiment. <i>Journal of Physical Chemistry C</i> , 2015, 119, 22137-22147.	1.5	98
32	Two-dimensional spatial coherence of excitons in semicrystalline polymeric semiconductors: Effect of molecular weight. <i>Physical Review B</i> , 2013, 88, .	1.1	96
33	Dark Vibronic Polaritons and the Spectroscopy of Organic Microcavities. <i>Physical Review Letters</i> , 2017, 118, 223601.	2.9	96
34	Extended-Charge-Transfer Excitons in Crystalline Supramolecular Photocatalytic Scaffolds. <i>Journal of the American Chemical Society</i> , 2016, 138, 11762-11774.	6.6	91
35	Perylene Diimide-Based H _j - and HJ-Aggregates: The Prospect of Exciton Band Shape Engineering in Organic Materials. <i>Journal of Physical Chemistry C</i> , 2019, 123, 20567-20578.	1.5	91
36	Experimental and theoretical study of temperature dependent exciton delocalization and relaxation in anthracene thin films. <i>Journal of Chemical Physics</i> , 2008, 128, 054505.	1.2	88

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37	Theory of Nanoscale Organic Cavities: The Essential Role of Vibration-Photon Dressed States. ACS Photonics, 2018, 5, 65-79.	3.2	88
38	An Efficient Narrowband Near-Infrared at 1040nm Organic Photodetector Realized by Intermolecular Charge Transfer Mediated Coupling Based on a Squaraine Dye. Advanced Materials, 2021, 33, e2100582.	11.1	88
39	Absorption and spontaneous emission in aggregates of conjugated polymers. Journal of Chemical Physics, 1998, 109, 8087-8101.	1.2	84
40	Absorption and photoluminescence in organic cavity QED. Physical Review A, 2017, 95, .	1.0	84
41	Circularly Polarized Luminescence as a Probe for Long-Range Interactions in Molecular Aggregates. Journal of Physical Chemistry B, 2011, 115, 10592-10603.	1.2	82
42	Polaron Delocalization in Conjugated Polymer Films. Journal of Physical Chemistry C, 2016, 120, 11394-11406.	1.5	79
43	Robust singlet fission in pentacene thin films with tuned charge transfer interactions. Nature Communications, 2018, 9, 954.	5.8	76
44	Sequential Doping Reveals the Importance of Amorphous Chain Rigidity in Charge Transport of Semi-Crystalline Polymers. Journal of Physical Chemistry Letters, 2017, 8, 4974-4980.	2.1	72
45	Spectral Signatures and Spatial Coherence of Bound and Unbound Polarons in P3HT Films: Theory Versus Experiment. Journal of Physical Chemistry C, 2018, 122, 18048-18060.	1.5	70
46	Strong Photophysical Similarities between Conjugated Polymers and J-aggregates. Journal of Physical Chemistry Letters, 2014, 5, 622-632.	2.1	68
47	Helterkelter-Like Perylene Polyisocyanopeptides. Chemistry - A European Journal, 2009, 15, 2536-2547.	1.7	64
48	Emission from aggregates of oligo-phenylene vinylenes: a recipe for superradiant H-aggregates. Chemical Physics Letters, 2000, 331, 7-13.	1.2	63
49	Excitons and Polarons in Organic Materials. Accounts of Chemical Research, 2020, 53, 2201-2211.	7.6	63
50	Temperature dependent exciton emission from herringbone aggregates of conjugated oligomers. Journal of Chemical Physics, 2004, 120, 7643-7658.	1.2	59
51	Confirmation of the Origins of Panchromatic Spectra in Squaraine Thin Films Targeted for Organic Photovoltaic Devices. Journal of Physical Chemistry C, 2015, 119, 18964-18974.	1.5	59
52	The red-phase of poly[2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene] (MEH-PPV): A disordered HJ-aggregate. Journal of Chemical Physics, 2013, 139, 114903.	1.2	58
53	Non-Kasha Behavior in Quadrupolar Dye Aggregates: The Red-Shifted H-Aggregate. Journal of Physical Chemistry C, 2019, 123, 3203-3215.	1.5	56
54	Vibronic coupling in quantum wires: Applications to polydiacetylene. Journal of Chemical Physics, 2011, 135, 054906.	1.2	54

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55	Vibronic fine structure in the absorption spectrum of oligothiophene thin films. <i>Journal of Chemical Physics</i> , 2005, 122, 114701.	1.2	53
56	Absorption and emission in pinwheel aggregates of oligo-phenylene vinylene molecules. <i>Journal of Chemical Physics</i> , 2001, 114, 5376-5390.	1.2	52
57	The Effect of Chain Bending on the Photophysical Properties of Conjugated Polymers. <i>Journal of Physical Chemistry B</i> , 2014, 118, 8352-8363.	1.2	51
58	Exciton mobility control through packing modifications in molecular crystals. <i>Physical Review B</i> , 2015, 91, .	1.1	51
59	Unusual Behavior of Two-Photon Absorption from Three-Level Molecules in a One-Dimensional Lattice. <i>Physical Review Letters</i> , 1995, 74, 2780-2783.	2.9	47
60	Mapping the Evolution of Spatial Exciton Coherence through Time-Resolved Fluorescence. <i>Journal of Physical Chemistry Letters</i> , 2014, 5, 1505-1510.	2.1	47
61	Reclassifying exciton-phonon coupling in molecular aggregates: Evidence of strong nonadiabatic coupling in oligothiophene crystals. <i>Journal of Chemical Physics</i> , 2007, 127, 184703.	1.2	46
62	Davydov Splitting in Squaraine Dimers. <i>Journal of Physical Chemistry C</i> , 2019, 123, 18734-18745.	1.5	41
63	Anisotropic Polaron Delocalization in Conjugated Homopolymers and Donor-Acceptor Copolymers. <i>Chemistry of Materials</i> , 2019, 31, 7033-7045.	3.2	39
64	Reply to the Comment on: Is multiple quantum nuclear magnetic resonance of water real?. <i>Journal of Chemical Physics</i> , 1992, 96, 1659-1661.	1.2	38
65	Analysis of the vibronic fine structure in circularly polarized emission spectra from chiral molecular aggregates. <i>Journal of Chemical Physics</i> , 2004, 120, 10594-10604.	1.2	38
66	New insights on the nature of two-dimensional polarons in semiconducting polymers: Infrared absorption in poly(3-hexylthiophene). <i>Journal of Chemical Physics</i> , 2014, 140, 244902.	1.2	38
67	Enhanced Davydov Splitting in Crystals of a Perylene Diimide Derivative. <i>Journal of Physical Chemistry Letters</i> , 2017, 8, 1118-1123.	2.1	37
68	Multiple mode exciton-vibrational coupling in H-aggregates: Synergistic enhancement of the quantum yield. <i>Journal of Chemical Physics</i> , 2010, 132, 094704.	1.2	36
69	Multiple Mode Exciton-Phonon Coupling: Applications to Photoluminescence in Oligothiophene Thin Films. <i>Journal of Physical Chemistry C</i> , 2007, 111, 6113-6123.	1.5	35
70	Unraveling the Effect of Conformational and Electronic Disorder in the Charge Transport Processes of Semiconducting Polymers. <i>Advanced Functional Materials</i> , 2018, 28, 1804142.	7.8	34
71	Spontaneous emission and absorption in model aggregates of π -conjugated oligomers. <i>Journal of Chemical Physics</i> , 1997, 107, 8152-8164.	1.2	32
72	Contrasting Photophysical Properties of Star-Shaped vs Linear Perylene Diimide Complexes. <i>Journal of the American Chemical Society</i> , 2013, 135, 3056-3066.	6.6	31

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73	Extreme Sensitivity of Circular Dichroism to Long-Range Excitonic Couplings in Helical Supramolecular Assemblies. <i>Journal of Physical Chemistry B</i> , 2010, 114, 817-825.	1.2	28
74	Anatomy of an Exciton: Vibrational Distortion and Exciton Coherence in H- and J-Aggregates. <i>Journal of Physical Chemistry B</i> , 2013, 117, 457-466.	1.2	28
75	Theory of coherent transient spectroscopy in molecular aggregates: The effects of interacting excitons. <i>Journal of Chemical Physics</i> , 1995, 103, 5939-5955.	1.2	27
76	Using circularly polarized luminescence to probe exciton coherence in disordered helical aggregates. <i>Journal of Chemical Physics</i> , 2008, 129, 024704.	1.2	24
77	Theory of Pump-Probe Spectroscopy of Molecular J-Aggregates. , 1996, , 111-160.		23
78	Temperature-dependent emission in disordered herringbone aggregates of conjugated oligomers. <i>Physical Review B</i> , 2005, 71, .	1.1	22
79	Phase separation, crystallinity and monomer-aggregate population control in solution processed small molecule solar cells. <i>Solar Energy Materials and Solar Cells</i> , 2016, 157, 366-376.	3.0	22
80	Unusual Non-Kasha Photophysical Behavior of Aggregates of Push-Pull Donor-Acceptor Chromophores. <i>Journal of Physical Chemistry C</i> , 2020, 124, 2146-2159.	1.5	22
81	Essential States Model for Merocyanine Dye Stacks: Bridging Electronic and Optical Absorption Properties. <i>Journal of Physical Chemistry C</i> , 2019, 123, 18654-18664.	1.5	21
82	Nonlinear optical response of one-dimensional molecular crystals: Breakdown of the local field approximation. <i>Journal of Chemical Physics</i> , 1992, 96, 8109-8116.	1.2	20
83	A Holstein-Peierls Approach to Excimer Spectra: The Evolution from Vibronically Structured to Unstructured Emission. <i>Journal of Physical Chemistry C</i> , 2022, 126, 4067-4081.	1.5	20
84	Exciton-phonon coupling in molecular crystals: Synergy between two intramolecular vibrational modes in quaterthiophene single crystals. <i>Journal of Chemical Physics</i> , 2009, 130, 234701.	1.2	19
85	Vibronic exciton model for low bandgap donor-acceptor polymers. <i>Journal of Chemical Physics</i> , 2020, 153, 244901.	1.2	19
86	HJ-aggregates of donor-acceptor donor oligomers and polymers. <i>Journal of Chemical Physics</i> , 2021, 155, 034905.	1.2	19
87	Exciton-phonon polaritons in organic microcavities: Testing a simple ansatz for treating a large number of chromophores. <i>Journal of Chemical Physics</i> , 2020, 152, 204113.	1.2	15
88	Determining the spatial coherence of excitons from the photoluminescence spectrum in charge-transfer J-aggregates. <i>Chemical Physics</i> , 2016, 481, 262-271.	0.9	14
89	Measurement and Theoretical Interpretation of Exciton Diffusion as a Function of Intermolecular Separation for Squaraines Targeted for Bulk Heterojunction Solar Cells. <i>Journal of Physical Chemistry C</i> , 2020, 124, 4032-4043.	1.5	14
90	Understanding Bipolarons in Conjugated Polymers Using a Multiparticle Holstein Approach. <i>Journal of Physical Chemistry C</i> , 0, , .	1.5	14

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91	Optical Spectra and Stokes Shift in Double-Stranded Helical Supramolecular Assemblies. <i>Journal of Physical Chemistry B</i> , 2009, 113, 9708-9717.	1.2	12
92	Coherence Domains in the Radiative Dynamics of Molecular Aggregates. <i>Molecular Crystals and Liquid Crystals</i> , 1991, 194, 331-336.	0.7	9
93	Frenkel "Holstein Hamiltonian applied to absorption spectra of quaterthiophene-based 2D hybrid organic-inorganic perovskites. <i>Journal of Chemical Physics</i> , 2020, 152, 144702.	1.2	8
94	Theory of exciton dynamics in molecular aggregates in presence of polaronic effects. <i>Chemical Physics Letters</i> , 2012, 529, 69-73.	1.2	7
95	Quantifying Polaron Mole Fractions and Interpreting Spectral Changes in Molecularly Doped Conjugated Polymers. <i>Advanced Electronic Materials</i> , 2022, 8, .	2.6	7
96	Temperature-dependent emission in disordered herringbone aggregates: stacking faults and point defects. <i>Journal of Luminescence</i> , 2005, 112, 395-401.	1.5	6
97	Designing molecular eigenstates in a four-level system. <i>Physical Review A</i> , 2005, 71, .	1.0	6
98	Photophysical Properties of Molecular Aggregates $\times 10^{11}$. <i>Materials and Energy</i> , 2016, , 93-130.	2.5	6
99	VIBRONIC COUPLING IN J-AGGREGATES. , 2012, , 49-75.		3
100	A Thermostable Protein Matrix for Spectroscopic Analysis of Organic Semiconductors. <i>Journal of the American Chemical Society</i> , 2020, 142, 13898-13907.	6.6	3
101	WEAK FIELD NONLINEAR OPTICAL RESPONSE OF FERMIONS IN FRENKEL EXCITON CHAINS. <i>International Journal of Modern Physics B</i> , 1992, 06, 3441-3467.	1.0	1
102	Radiative Decay of Excitons in Model Aggregates of π -Conjugated Oligomers. <i>Materials Research Society Symposia Proceedings</i> , 1997, 488, 277.	0.1	1
103	Frenkel Biexcitons in 1D J-aggregates. <i>Materials Research Society Symposia Proceedings</i> , 1995, 413, 257.	0.1	0
104	Prospects for All-Optical Alignment and Quantum State Control of Nonpolar Molecules. <i>ACS Symposium Series</i> , 2002, , 304-319.	0.5	0
105	Two-dimensional polaron coherence in Poly(3-hexylthiophene). <i>Proceedings of SPIE</i> , 2014, , .	0.8	0
106	Correction to "Non-Kasha Behavior in Quadrupolar Dye Aggregates: The Red-Shifted H-Aggregate". <i>Journal of Physical Chemistry C</i> , 2019, 123, 30765-30765.	1.5	0
107	Correction to "Confirmation of the Origins of Panchromatic Spectra in Squaraine Thin Films Targeted for Organic Photovoltaic Devices". <i>Journal of Physical Chemistry C</i> , 2022, 126, 11436-11437.	1.5	0