Frank Ludwig

List of Publications by Year
in descending order

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Version: 2024-02-01

95 papers	2,569 citations	172457 29 h-index	233421 45 g-index
98 all docs	98 docs citations	98 times ranked	2235 citing authors

#	Article	IF	Citations
1	Rotational dynamics of magnetic nanoparticles in different matrix systems. ChemistrySelect, 2022, 7, 981-1008.	1.5	2
2	Robust approaches for model-free small-angle scattering data analysis. Journal of Applied Crystallography, 2022, 55, 586-591.	4.5	4
3	Magnetic dynamics in suspensions of ferrimagnetic platelets. Journal of Molecular Liquids, 2022, 360, 119484.	4.9	3
4	Single harmonic-based narrowband magnetic particle imaging. Measurement Science and Technology, 2022, 33, 095405.	2.6	8
5	Dynamic gelation process observed in Cartesian magnetic particle imaging. Journal of Magnetism and Magnetic Materials, 2021, 522, 167478.	2.3	4
6	Determination of the effective anisotropy constant of magnetic nanoparticles â€“ Comparison between two approaches. Journal of Magnetism and Magnetic Materials, 2021, 519, 167402.	2.3	10
7	Dependence of biomolecule detection on magnetic nanoparticle concentration. Journal of Magnetism and Magnetic Materials, 2021, 517, 167408.	2.3	16
8	Toward Rapid and Sensitive Detection of SARS-CoV-2 with Functionalized Magnetic Nanoparticles. ACS Sensors, 2021, 6, 976-984.	7.8	76
9	Point-of-need detection of pathogen-specific nucleic acid targets using magnetic particle spectroscopy. Biosensors and Bioelectronics, 2021, 192, 113536.	10.1	12
10	Evaluation of effective magnetic anisotropy constant of magnetic nanoparticles from coercive field of AC magnetization curve. Journal of Applied Physics, 2021, 130, .	2.5	6
11	Simultaneous Imaging of Magnetic Nanoparticle Concentration, Temperature, and Viscosity. Physical Review Applied, 2021, 16, .	3.8	10
12	The Dissociation Rate of Acetylacetonate Ligands Governs the Size of Ferrimagnetic Zinc Ferrite Nanocubes. ACS Applied Materials & Interfaces, 2020, 12, 217-226.	8.0	9
13	Scale-dependent particle diffusivity and apparent viscosity in polymer solutions as probed by dynamic magnetic nanorheology. Soft Matter, 2020, 16, 7562-7575.	2.7	18
14	Visualization of spatial and temporal temperature distributions with magnetic particle imaging for liver tumor ablation therapy. Scientific Reports, 2020, 10, 7480.	3.3	31
15	Magnetic field dependence of the effective magnetic moment of multi-core nanoparticles. Journal of Applied Physics, 2020, 127, .	2.5	14
16	Tailoring the surface plasmon resonance energy of Au nanowire arrays by defect management and thermal treatment. Physica E: Low-Dimensional Systems and Nanostructures, 2020, 121, 114092.	2.7	2
17	Magnetic nanoparticle-based biomolecule imaging with a scanning magnetic particle spectrometer. Nanotechnology, 2020, 31, 225101.	2.6	9
18	Estimation of the effective magnetic anisotropy constant of multi-core based magnetic nanoparticles from the temperature dependence of the coercive field. Journal of Applied Physics, 2020, 127, .	2.5	13

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19	Static magnetic response of multicore particles. Physical Review E, 2020, 102, 032603.	2.1	10
20	Magnetic field orientation dependent dynamic susceptibility and Brownian relaxation time of magnetic nanoparticles. Applied Physics Letters, 2019, 115, .	3.3	9
21	In-Field Orientation and Dynamics of Ferrofluids Studied by MÃ¶ssbauer Spectroscopy. ACS Applied Materials & Interfaces, 2019, 11, 3160-3168.	8.0	9
22	Multiparametric Magnetic Particle Spectroscopy of CoFe₂O₄ Nanoparticles in Viscous Media. Journal of Physical Chemistry C, 2019, 123, 6787-6801.	3.1	38
23	Biophysical Characterization of (Silica-coated) Cobalt Ferrite Nanoparticles for Hyperthermia Treatment. Nanomaterials, 2019, 9, 1713.	4.1	17
24	Excitation frequency dependence of temperature resolution in magnetic nanoparticle temperature imaging with a scanning magnetic particle spectrometer. Journal of Magnetism and Magnetic Materials, 2019, 471, 340-345.	2.3	9
25	A novel characterization technique for superparamagnetic iron oxide nanoparticles: The superparamagnetic quantifier, compared with magnetic particle spectroscopy. Review of Scientific Instruments, 2019, 90, 024101.	1.3	20
26	Field-dependent dynamic responses from dilute magnetic nanoparticle dispersions. Nanoscale, 2018, 10, 2052-2066.	5.6	29
27	Relating Magnetic Properties and High Hyperthermia Performance of Iron Oxide Nanoflowers. Journal of Physical Chemistry C, 2018, 122, 3068-3077.	3.1	107
28	Magnetic nanoparticle thermometry independent of Brownian relaxation. Journal Physics D: Applied Physics, 2018, 51, 015001.	2.8	14
29	Magnetic Relaxation of Agglomerated and Immobilized Iron Oxide Nanoparticles for Hyperthermia and Imaging Applications. IEEE Magnetics Letters, 2018, 9, 1-5.	1.1	17
30	Magnetic nanoparticle temperature imaging with a scanning magnetic particle spectrometer. Measurement Science and Technology, 2018, 29, 115903.	2.6	27
31	Spatial and Temperature Resolutions of Magnetic Nanoparticle Temperature Imaging with a Scanning Magnetic Particle Spectrometer. Nanomaterials, 2018, 8, 866.	4.1	16
32	Fe²⁺ Deficiencies, FeO Subdomains, and Structural Defects Favor Magnetic Hyperthermia Performance of Iron Oxide Nanocubes into Intracellular Environment. Nano Letters, 2018, 18, 6856-6866.	9.1	53
33	Influence of clustering on the magnetic properties and hyperthermia performance of iron oxide nanoparticles. Nanotechnology, 2018, 29, 425705.	2.6	31
34	Dynamics of magnetic nanoparticles in viscoelastic media. Journal of Magnetism and Magnetic Materials, 2017, 427, 331-335.	2.3	25
35	Dual-frequency magnetic particle imaging of the Brownian particle contribution. Journal of Magnetism and Magnetic Materials, 2017, 427, 156-161.	2.3	35
36	The Anisotropy of the AC Susceptibility of Immobilized Magnetic Nanoparticlesâ€"the Influence of Intra-Potential-Well Contribution on the AC Susceptibility Spectrum. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	10

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37	Analysis of AC Susceptibility Spectra for the Characterization of Magnetic Nanoparticles. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	24
38	Magnetic Field Dependence of Ni Nanorod Brownian Relaxation. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	13
39	Direct protein quantification in complex sample solutions by surface-engineered nanorod probes. Scientific Reports, 2017, 7, 4752.	3.3	11
40	Colloidal Flowerâ€shaped Iron Oxide Nanoparticles: Synthesis Strategies and Coatings. Particle and Particle Systems Characterization, 2017, 34, 1700094.	2.3	71
41	Distribution functions of magnetic nanoparticles determined by a numerical inversion method. New Journal of Physics, 2017, 19, 073012.	2.9	42
42	Effect of alignment of easy axes on dynamic magnetization of immobilized magnetic nanoparticles. Journal of Magnetism and Magnetic Materials, 2017, 427, 162-167.	2.3	45
43	Size analysis of single-core magnetic nanoparticles. Journal of Magnetism and Magnetic Materials, 2017, 427, 19-24.	2.3	23
44	Homogeneous Biosensing Based on Magnetic Particle Labels. Sensors, 2016, 16, 828.	3.8	75
45	Influence of static magnetic field strength on the temperature resolution of a magnetic nanoparticle thermometer. Journal of Applied Physics, 2016, 120, 143902.	2.5	20
46	Magnetic-field dependence of Brownian and NÃ©el relaxation times. Journal of Applied Physics, 2016, 119, .	2.5	135
47	Homogeneous Protein Analysis by Magnetic Coreâ€“Shell Nanorod Probes. ACS Applied Materials & Interfaces, 2016, 8, 8893-8899.	8.0	18
48	Simultaneous Study of Brownian and NÃ©el Relaxation Phenomena in Ferrofluids by MÃ¶ssbauer Spectroscopy. Nano Letters, 2016, 16, 1150-1155.	9.1	38
49	A shielded fluxgate sensor for spatially resolved measurements of magnetic dipole fields. Sensors and Actuators A: Physical, 2016, 238, 229-233.	4.1	3
50	Polymer/Iron Oxide Nanoparticle Compositesâ€”A Straight Forward and Scalable Synthesis Approach. International Journal of Molecular Sciences, 2015, 16, 19752-19768.	4.1	18
51	Classification of Magnetic Nanoparticle Systemsâ€”Synthesis, Standardization and Analysis Methods in the NanoMag Project. International Journal of Molecular Sciences, 2015, 16, 20308-20325.	4.1	59
52	Optical biosensor technologies for molecular diagnostics at the point-of-care. , 2015, , .		3
53	Debye-Based Frequency-Domain Magnetization Model for Magnetic Nanoparticles in Magnetic Particle Spectroscopy. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	19
54	Drive-Field Frequency Dependent MPI Performance of Single-Core Magnetite Nanoparticle Tracers. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	28

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55	A Phenomenological Description of the MPS Signal Using a Model for the Field Dependence of the Effective Relaxation Time. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	2
56	Optimization of MNPs by size fractionation for MPI application. , 2015, , .		0
57	NanoMag — Standardization of analysis methods for magnetic nanoparticles. , 2015, , .		0
58	Dynamics of CoFe2O4 Single-Core Nanoparticles in Viscoelastic Media. Physics Procedia, 2015, 75, 1150-1157.	1.2	19
59	Suitability of magnetic single- and multi-core nanoparticles to detect protein binding with dynamic magnetic measurement techniques. Journal of Magnetism and Magnetic Materials, 2015, 380, 236-240.	2.3	8
60	Single-core magnetic markers in rotating magnetic field based homogeneous bioassays and the law of mass action. Journal of Magnetism and Magnetic Materials, 2015, 380, 205-208.	2.3	4
61	Effective particle magnetic moment of multi-core particles. Journal of Magnetism and Magnetic Materials, 2015, 380, 221-226.	2.3	40
62	Magnetic Characterization of Clustered Core Magnetic Nanoparticles for MPI. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	7
63	Resolving particle size modality in bi-modal iron oxide nanoparticle suspensions. Journal of Magnetism and Magnetic Materials, 2015, 380, 140-143.	2.3	10
64	Magnetic, Structural, and Particle Size Analysis of Single- and Multi-Core Magnetic Nanoparticles. IEEE Transactions on Magnetics, 2014, 50, 1-4.	2.1	13
65	Dynamic Magnetic Properties of Optimized Magnetic Nanoparticles for Magnetic Particle Imaging. IEEE Transactions on Magnetics, 2014, 50, 1-4.	2.1	8
66	Protein detection with magnetic nanoparticles in a rotating magnetic field. Journal of Applied Physics, 2014, 115, .	2.5	33
67	Self-consistent magnetic properties of magnetite tracers optimized for magnetic particle imaging measured by ac susceptometry, magnetorelaxometry and magnetic particle spectroscopy. Journal of Magnetism and Magnetic Materials, 2014, 360, 169-173.	2.3	50
68	Direct Protein Detection in the Sample Solution by Monitoring Rotational Dynamics of Nickel Nanorods. Small, 2014, 10, 407-411.	10.0	33
69	Size dependent structural and magnetic properties of FeOâ€“Fe3O4 nanoparticles. Nanoscale, 2013, 5, 12286.	5.6	103
70	Highly stable monodisperse PEGylated iron oxide nanoparticle aqueous suspensions: a nontoxic tracer for homogeneous magnetic bioassays. Nanoscale, 2013, 5, 11447.	5.6	32
71	Size Distribution and Magnetization Optimization of Single-Core Iron Oxide Nanoparticles by Exploiting Design of Experiment Methodology. IEEE Transactions on Magnetics, 2013, 49, 201-207.	2.1	22
72	Scanner setup and reconstruction for three-dimensional magnetic particle imaging. , 2013, , .		9

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73	Characterization of magnetic nanoparticle systems with respect to their magnetic particle imaging performance. Biomedizinische Technik, 2013, 58, 535-45.	0.8	60
74	Magnetic particle imaging scanner with 10-kHz drive-field frequency. Biomedizinische Technik, 2013, 58, 557-63.	0.8	19
75	Optimization of Magnetic Nanoparticles for Magnetic Particle Imaging. IEEE Transactions on Magnetics, 2012, 48, 3780-3783.	2.1	61
76	Homogeneous Bioassays Based on the Manipulation of Magnetic Nanoparticles by Rotating and Alternating Magnetic Fieldsâ€"A Comparison. IEEE Transactions on Magnetics, 2012, 48, 3792-3795.	2.1	27
77	Modeling and Development of a Biosensor Based on Optical Relaxation Measurements of Hybrid Nanoparticles. ACS Nano, 2012, 6, 791-801.	14.6	44
78	Magnetic fluid dynamics in a rotating magnetic field. Journal of Applied Physics, 2012, 111, .	2.5	39
79	Spatial and field resolution of wire-wound fluxgates in magnetic dipole fields. Sensors and Actuators A: Physical, 2012, 173, 30-35.	4.1	5
80	New Perspectives for MPI: A Toolbox for Tracer Research. Springer Proceedings in Physics, 2012, , 99-103.	0.2	13
81	Fluxgate based detection of magnetic nanoparticle dynamics in a rotating magnetic field. Applied Physics Letters, 2011, 99, .	3.3	61
82	Homogeneous biosensor based on optical detection of the rotational dynamics of anisotropic nanoparticles. Procedia Engineering, 2010, 5, 1107-1110.	1.2	11
83	Determination of core and hydrodynamic size distributions of CoFe2O4 nanoparticle suspensions using ac susceptibility measurements. Journal of Applied Physics, 2010, 108, .	2.5	54
84	Characterization of Magnetic Core-Shell Nanoparticle Suspensions Using AC Susceptibility for Frequencies up to 1 MHz. AIP Conference Proceedings, 2010, , .	0.4	15
85	Multivariate Magnetic Particle Spectroscopy for Magnetic Nanoparticle Characterization. , 2010, , .		9
86	Comparison and Calibration of Fluxgate and SQUID Magnetorelaxometry Techniques for the Characterization of Magnetic Core-Shell Nanoparticles. IEEE Transactions on Magnetics, 2009, 45, 4857-4860.	2.1	11
87	Binding assays with streptavidin-functionalized superparamagnetic nanoparticles and biotinylated analytes using fluxgate magnetorelaxometry. Journal of Magnetism and Magnetic Materials, 2009, 321, 1628-1631.	2.3	38
88	Characterization of magnetic coreâ€"shell nanoparticles by fluxgate magnetorelaxometry, ac susceptibility, transmission electron microscopy and photon correlation spectroscopyâ€"A comparative study. Journal of Magnetism and Magnetic Materials, 2009, 321, 1644-1647.	2.3	26
89	Noise Optimization of Racetrack Fluxgate Sensors. Sensor Letters, 2009, 7, 317-321.	0.4	11
90	Characterization of superparamagnetic Fe3O4 nanoparticles by fluxgate magnetorelaxometry for use in biomedical applications. Journal of Applied Physics, 2008, 103, 07A314.	2.5	20

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91	Liquid Phase Immunoassay Using Magnetic Markers and Superconducting Quantum Interference Device. Japanese Journal of Applied Physics, 2007, 46, 7524.	1.5	16
92	Characterization of superparamagnetic nanoparticles by analyzing the magnetization and relaxation dynamics using fluxgate magnetometers. Journal of Applied Physics, 2007, 101, 113909.	2.5	56
93	Properties of magnetic nanoparticles in the Brownian relaxation range for liquid phase immunoassays. Journal of Applied Physics, 2007, 102, 054901.	2.5	35
94	Magnetorelaxometry of magnetic nanoparticles with fluxgate magnetometers for the analysis of biological targets. Journal of Magnetism and Magnetic Materials, 2005, 293, 690-695.	2.3	67
95	Magnetorelaxometry of magnetic nanoparticles in magnetically unshielded environment utilizing a differential fluxgate arrangement. Review of Scientific Instruments, 2005, 76, 106102.	1.3	82