Matteo Cargnello

List of Publications by Year
in descending order

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123 papers	11,887 citations	41258 49 h-index	27345 106 g-index
129 all docs	129 docs citations	129 times ranked	14356 citing authors

#	Article	IF	Citations
1	Control of Metal Nanocrystal Size Reveals Metal-Support Interface Role for Ceria Catalysts. Science, 2013, 341, 771-773.	6.0	1,142
2	A rigorous electrochemical ammonia synthesis protocol with quantitative isotope measurements. Nature, 2019, 570, 504-508.	13.7	1,006
3	Nonaqueous Synthesis of TiO₂ Nanocrystals Using TiF₄ to Engineer Morphology, Oxygen Vacancy Concentration, and Photocatalytic Activity. Journal of the American Chemical Society, 2012, 134, 6751-6761.	6.6	854
4	Exceptional Activity for Methane Combustion over Modular Pd@CeO ₂ Subunits on Functionalized Al ₂ O ₃. Science, 2012, 337, 713-717.	6.0	842
5	Electrochemical Ammonia Synthesisâ€"The Selectivity Challenge. ACS Catalysis, 2017, 7, 706-709.	5.5	689
6	Solution-Phase Synthesis of Titanium Dioxide Nanoparticles and Nanocrystals. Chemical Reviews, 2014, 114, 9319-9345.	23.0	343
7	Ammonia synthesis from N₂and H₂O using a lithium cycling electrification strategy at atmospheric pressure. Energy and Environmental Science, 2017, 10, 1621-1630.	15.6	342
8	Embedded Phases: A Way to Active and Stable Catalysts. ChemSusChem, 2010, 3, 24-42.	3.6	240
9	CuO_{<i>x</i>}â^'TiO₂ Photocatalysts for H₂ Production from Ethanol and Glycerol Solutions. Journal of Physical Chemistry A, 2010, 114, 3916-3925.	1.1	239
10	Dynamical Observation and Detailed Description of Catalysts under Strong Metalâ€"Support Interaction. Nano Letters, 2016, 16, 4528-4534.	4.5	230
11	Electrolyte Engineering for Efficient Electrochemical Nitrate Reduction to Ammonia on a Titanium Electrode. ACS Sustainable Chemistry and Engineering, 2020, 8, 2672-2681.	3.2	217
12	Synthesis of Dispersible Pd@CeO₂Coreâ^'Shell Nanostructures by Self-Assembly. Journal of the American Chemical Society, 2010, 132, 1402-1409.	6.6	214
13	Mechanistic Understanding and the Rational Design of Sinter-Resistant Heterogeneous Catalysts. ACS Catalysis, 2017, 7, 7156-7173.	5.5	214
14	Low-Temperature Restructuring of CeO₂-Supported Ru Nanoparticles Determines Selectivity in CO₂ Catalytic Reduction. Journal of the American Chemical Society, 2018, 140, 13736-13745.	6.6	210
15	Efficient Removal of Organic Ligands from Supported Nanocrystals by Fast Thermal Annealing Enables Catalytic Studies on Well-Defined Active Phases. Journal of the American Chemical Society, 2015, 137, 6906-6911.	6.6	208
16	Substitutional doping in nanocrystal superlattices. Nature, 2015, 524, 450-453.	13.7	174
17	Catalyst deactivation via decomposition into single atoms and the role of metal loading. Nature Catalysis, 2019, 2, 748-755.	16.1	171
18	Systematic Structureâ€"Property Relationship Studies in Palladium-Catalyzed Methane Complete Combustion. ACS Catalysis, 2017, 7, 7810-7821.	5.5	151

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19	Photocatalytic Hydrogen Evolution from Substoichiometric Colloidal WO_{3â€“<i>x</i>} Nanowires. ACS Energy Letters, 2018, 3, 1904-1910.	8.8	145
20	Strategies toward Selective Electrochemical Ammonia Synthesis. ACS Catalysis, 2019, 9, 8316-8324.	5.5	145
21	Photocatalytic H₂ and Addedâ€Value Byâ€Products â€“ The Role of Metal Oxide Systems in Their Synthesis from Oxygenates. European Journal of Inorganic Chemistry, 2011, 2011, 4309-4323.	1.0	134
22	Uniform Pt/Pd Bimetallic Nanocrystals Demonstrate Platinum Effect on Palladium Methane Combustion Activity and Stability. ACS Catalysis, 2017, 7, 4372-4380.	5.5	124
23	Methane Oxidation on Pd@ZrO₂/Siâ€“Al₂O₃ Is Enhanced by Surface Reduction of ZrO₂. ACS Catalysis, 2014, 4, 3902-3909.	5.5	119
24	Systematic Identification of Promoters for Methane Oxidation Catalysts Using Size- and Composition-Controlled Pd-Based Bimetallic Nanocrystals. Journal of the American Chemical Society, 2017, 139, 11989-11997.	6.6	109
25	Multiwalled Carbon Nanotubes Drive the Activity of Metal@oxide Coreâ€“Shell Catalysts in Modular Nanocomposites. Journal of the American Chemical Society, 2012, 134, 11760-11766.	6.6	107
26	Exceptional Thermal Stability of Pd@CeO₂ Coreâ€“Shell Catalyst Nanostructures Grafted onto an Oxide Surface. Nano Letters, 2013, 13, 2252-2257.	4.5	106
27	Engineering titania nanostructure to tune and improve its photocatalytic activity. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 3966-3971.	3.3	106
28	Heterogeneous Catalysts Need Not Be so â€œHeterogeneousâ€: Monodisperse Pt Nanocrystals by Combining Shape-Controlled Synthesis and Purification by Colloidal Recrystallization. Journal of the American Chemical Society, 2013, 135, 2741-2747.	6.6	105
29	Dynamic structural evolution of supported palladiumâ€“ceria coreâ€“shell catalysts revealed by in situ electron microscopy. Nature Communications, 2015, 6, 7778.	5.8	105
30	Steam-created grain boundaries for methane Câ€“H activation in palladium catalysts. Science, 2021, 373, 1518-1523.	6.0	105
31	High-temperature crystallization of nanocrystals into three-dimensional superlattices. Nature, 2017, 548, 197-201.	13.7	101
32	Co-axial heterostructures integrating palladium/titanium dioxide with carbon nanotubes for efficient electrocatalytic hydrogen evolution. Nature Communications, 2016, 7, 13549.	5.8	98
33	Colloidal nanocrystals for heterogeneous catalysis. Nano Today, 2019, 24, 15-47.	6.2	98
34	A Versatile Method for Ammonia Detection in a Range of Relevant Electrolytes via Direct Nuclear Magnetic Resonance Techniques. ACS Catalysis, 2019, 9, 5797-5802.	5.5	97
35	Modular Pd/Zeolite Composites Demonstrating the Key Role of Support Hydrophobic/Hydrophilic Character in Methane Catalytic Combustion. ACS Catalysis, 2019, 9, 4742-4753.	5.5	97
36	Synthesis and Stability of Pd@CeO₂ Coreâ€“Shell Catalyst Films in Solid Oxide Fuel Cell Anodes. ACS Catalysis, 2013, 3, 1801-1809.	5.5	96

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37	A Versatile Approach to the Synthesis of Functionalized Thiol-Protected Palladium Nanoparticles. Chemistry of Materials, 2011, 23, 3961-3969.	3.2	94
38	Synthesis of Colloidal Pd/Au Dilute Alloy Nanocrystals and Their Potential for Selective Catalytic Oxidations. Journal of the American Chemical Society, 2018, 140, 12930-12939.	6.6	92
39	Active and Stable Embedded Au@CeO₂ Catalysts for Preferential Oxidation of CO. Chemistry of Materials, 2010, 22, 4335-4345.	3.2	87
40	Novel embedded Pd@CeO₂catalysts: a way to active and stable catalysts. Dalton Transactions, 2010, 39, 2122-2127.	1.6	80
41	Colloidal Nanocrystals as Building Blocks for Well-Defined Heterogeneous Catalysts. Chemistry of Materials, 2019, 31, 576-596.	3.2	80
42	Probing Atomic Distributions in Mono- and Bimetallic Nanoparticles by Supervised Machine Learning. Nano Letters, 2019, 19, 520-529.	4.5	80
43	A Versatile Route to Coreâ€"Shell Catalysts: Synthesis of Dispersible M@Oxide (M=Pd, Pt;) Tj ETQq1 1 0.784314 rgBT /Overlock 10 Tf 140-148.	3.6	74
44	A Combined Theoryâ€Experiment Analysis of the Surface Species in Lithiumâ€Mediated NH₃ Electrosynthesis. ChemElectroChem, 2020, 7, 1542-1549.	1.7	67
45	Study of the Water-Gas-Shift Reaction on Pd@CeO₂/Al₂O₃ Coreâ^'Shell Catalysts. Journal of Physical Chemistry C, 2011, 115, 915-919.	1.5	66
46	Transition state and product diffusion control by polymerâ€"nanocrystal hybrid catalysts. Nature Catalysis, 2019, 2, 852-863.	16.1	64
47	Synergistic Oxygen Evolving Activity of a TiO₂-Rich Reconstructed SrTiO₃(001) Surface. Journal of the American Chemical Society, 2015, 137, 2939-2947.	6.6	58
48	Opportunities for Tailoring Catalytic Properties Through Metal-Support Interactions. Catalysis Letters, 2012, 142, 1043-1048.	1.4	55
49	Enhanced Catalytic Activity for Methane Combustion through <i>in Situ</i> Water Sorption. ACS Catalysis, 2020, 10, 8157-8167.	5.5	55
50	Dendron-Mediated Engineering of Interparticle Separation and Self-Assembly in Dendronized Gold Nanoparticles Superlattices. Journal of the American Chemical Society, 2015, 137, 10728-10734.	6.6	51
51	Engineering Localized Surface Plasmon Interactions in Gold by Silicon Nanowire for Enhanced Heating and Photocatalysis. Nano Letters, 2017, 17, 1839-1845.	4.5	50
52	Alcohol induced ultra-fine dispersion of Pt on tuned morphologies of CeO2 for CO oxidation. Applied Catalysis B: Environmental, 2013, 130-131, 121-131.	10.8	49
53	Engineering of Rutheniumâ€"Iron Oxide Colloidal Heterostructures: Improved Yields in CO₂ Hydrogenation to Hydrocarbons. Angewandte Chemie - International Edition, 2019, 58, 17451-17457.	7.2	49
54	Highly Active and Thermally Stable Core-Shell Catalysts for Solid Oxide Fuel Cells. Journal of the Electrochemical Society, 2011, 158, B596.	1.3	48

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55	Quantifying â€œSoftnessâ€•of Organic Coatings on Gold Nanoparticles Using Correlated Small-Angle X-ray and Neutron Scattering. Nano Letters, 2015, 15, 8008-8012.	4.5	47
56	Atmospheric methane removal: a research agenda. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2021, 379, 20200454.	1.6	44
57	Tuning Precursor Reactivity toward Nanometer-Size Control in Palladium Nanoparticles Studied by in Situ Small Angle X-ray Scattering. Chemistry of Materials, 2018, 30, 1127-1135.	3.2	43
58	<i>In Situ</i> X-ray Scattering Guides the Synthesis of Uniform PtSn Nanocrystals. Nano Letters, 2018, 18, 4053-4057.	4.5	43
59	Hierarchical Materials Design by Pattern Transfer Printing of Self-Assembled Binary Nanocrystal Superlattices. Nano Letters, 2017, 17, 1387-1394.	4.5	40
60	Deconvoluting Transient Water Effects on the Activity of Pd Methane Combustion Catalysts. Industrial & Engineering Chemistry Research, 2018, 57, 10261-10268.	1.8	40
61	Fast Nanorod Diffusion through Entangled Polymer Melts. ACS Macro Letters, 2015, 4, 952-956.	2.3	39
62	Design of Organic/Inorganic Hybrid Catalysts for Energy and Environmental Applications. ACS Central Science, 2020, 6, 1916-1937.	5.3	38
63	Revealing particle growth mechanisms by combining high-surface-area catalysts made with monodisperse particles and electron microscopy conducted at atmospheric pressure. Journal of Catalysis, 2016, 337, 240-247.	3.1	36
64	High-temperature calcination improves the catalytic properties of alumina-supported Pd@ceria prepared by self assembly. Journal of Catalysis, 2013, 306, 109-115.	3.1	33
65	Supported platinumâ€"zinc oxide coreâ€"shell nanoparticle catalysts for methanol steam reforming. Journal of Materials Chemistry A, 2014, 2, 19509-19514.	5.2	31
66	Tailoring photocatalytic nanostructures for sustainable hydrogen production. Nanoscale, 2014, 6, 97-105.	2.8	30
67	Palladium oxidation leads to methane combustion activity: Effects of particle size and alloying with platinum. Journal of Chemical Physics, 2019, 151, 154703.	1.2	30
68	Uniform Bimetallic Nanocrystals by High-Temperature Seed-Mediated Colloidal Synthesis and Their Catalytic Properties for Semiconducting Nanowire Growth. Chemistry of Materials, 2015, 27, 5833-5838.	3.2	27
69	Enhanced Energy Transfer in Quasiâ€Quaternary Nanocrystal Superlattices. Advanced Materials, 2014, 26, 2419-2423.	11.1	26
70	Playing with Structures at the Nanoscale: Designing Catalysts by Manipulation of Clusters and Nanocrystals as Building Blocks. ChemPhysChem, 2013, 14, 3869-3877.	1.0	25
71	Nanoscale Spatial Distribution of Supported Nanoparticles Controls Activity and Stability in Powder Catalysts for CO Oxidation and Photocatalytic H₂ Evolution. Journal of the American Chemical Society, 2020, 142, 14481-14494.	6.6	25
72	Thermal and photochemical reactions of methanol on nanocrystalline anatase TiO₂thin films. Physical Chemistry Chemical Physics, 2015, 17, 17190-17201.	1.3	24

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73	Shape-dependence of the thermal and photochemical reactions of methanol on nanocrystalline anatase TiO2. Surface Science, 2016, 654, 1-7.	0.8	24
74	Size-controlled nanocrystals reveal spatial dependence and severity of nanoparticle coalescence and Ostwald ripening in sintering phenomena. Nanoscale, 2021, 13, 930-938.	2.8	24
75	Insights and comparison of structureâ€“property relationships in propane and propene catalytic combustion on Pd- and Pt-based catalysts. Journal of Catalysis, 2021, 401, 89-101.	3.1	24
76	Colloidal Platinumâ€“Copper Nanocrystal Alloy Catalysts Surpass Platinum in Low-Temperature Propene Combustion. Journal of the American Chemical Society, 2022, 144, 1612-1621.	6.6	24
77	Artificial inflation of apparent photocatalytic activity induced by catalyst-mass-normalization and a method to fairly compare heterojunction systems. Energy and Environmental Science, 2019, 12, 1657-1667.	15.6	23
78	Polycatenar Ligand Control of the Synthesis and Self-Assembly of Colloidal Nanocrystals. Journal of the American Chemical Society, 2016, 138, 10508-10515.	6.6	22
79	Block-Co-polymer-Assisted Synthesis of All Inorganic Highly Porous Heterostructures with Highly Accessible Thermally Stable Functional Centers. ACS Applied Materials & Interfaces, 2019, 11, 30154-30162.	4.0	22
80	Engineering uniform nanocrystals: Mechanism of formation and selfâ€assembly into bimetallic nanocrystal superlattices. AIChE Journal, 2016, 62, 392-398.	1.8	20
81	Understanding the preferential oxidation of carbon monoxide (PrOx) using sizeâ€controlled Au nanocrystal catalyst. AIChE Journal, 2018, 64, 3159-3167.	1.8	20
82	Rationalizing an Unexpected Structure Sensitivity in Heterogeneous Catalysisâ€”CO Hydrogenation over Rh as a Case Study. ACS Catalysis, 2021, 11, 5189-5201.	5.5	20
83	X-ray Mapping of Nanoparticle Superlattice Thin Films. ACS Nano, 2014, 8, 12843-12850.	7.3	19
84	Support Acidity Improves Pt Activity in Propane Combustion in the Presence of Steam by Reducing Water Coverage on the Active Sites. ACS Catalysis, 2021, 11, 6672-6683.	5.5	19
85	Langmuirâ€“Blodgett Deposition of Graphene Oxideâ€”Identifying Marangoni Flow as a Process that Fundamentally Limits Deposition Control. Langmuir, 2018, 34, 9683-9691.	1.6	18
86	Elucidating the synergistic mechanism of nickel-molybdenum electrocatalysts for the hydrogen evolution reaction. MRS Communications, 2016, 6, 241-246.	0.8	16
87	Low-Temperature Methane Partial Oxidation to Syngas with Modular Nanocrystal Catalysts. ACS Applied Nano Materials, 2018, 1, 5258-5267.	2.4	16
88	Revealing the structure of a catalytic combustion active-site ensemble combining uniform nanocrystal catalysts and theory insights. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 14721-14729.	3.3	16
89	Synthesis, Characterization, and Light-Induced Spatial Charge Separation in Janus Graphene Oxide. Chemistry of Materials, 2018, 30, 2084-2092.	3.2	15
90	Au@TiO2 Coreâ€“Shell Nanostructures with High Thermal Stability. Catalysis Letters, 2014, 144, 1939-1945.	1.4	14

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91	Dilute Pd/Au Alloys Replace Au/TiO₂ Interface for Selective Oxidation Reactions. ACS Catalysis, 2020, 10, 1716-1720.	5.5	14
92	Voltage cycling process for the electroconversion of biomass-derived polyols. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	14
93	Monolayer Support Control and Precise Colloidal Nanocrystals Demonstrate Metalâ€"Support Interactions in Heterogeneous Catalysts. Advanced Materials, 2021, 33, e2104533.	11.1	13
94	Microkinetic Modeling of Propene Combustion on a Stepped, Metallic Palladium Surface and the Importance of Oxygen Coverage. ACS Catalysis, 2022, 12, 1742-1757.	5.5	13
95	Steering CO ₂ hydrogenation toward Câ€"C coupling to hydrocarbons using porous organic polymer/metal interfaces. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	3.3	13
96	Nanoparticle diffusion during gelation of tetra poly(ethylene glycol) provides insight into nanoscale structural evolution. Soft Matter, 2020, 16, 2256-2265.	1.2	12
97	Nanorod Mobility Influences Polymer Diffusion in Polymer Nanocomposites. ACS Macro Letters, 2017, 6, 869-874.	2.3	10
98	General Self-Assembly Method for Deposition of Graphene Oxide into Uniform Close-Packed Monolayer Films. Langmuir, 2019, 35, 4460-4470.	1.6	10
99	Formic acid oxidation boosted by Rh single atoms. Nature Nanotechnology, 2020, 15, 346-347.	15.6	10
100	A Model to Determine the Chemical Expansion in Non-Stoichiometric Oxides Based on the Elastic Force Dipole. Journal of the Electrochemical Society, 2014, 161, F3060-F3064.	1.3	9
101	Insight into restructuring of Pd-Au nanoparticles using EXAFS. Radiation Physics and Chemistry, 2020, 175, 108304.	1.4	9
102	Determining number of sites on ceria stabilizing single atoms via metal nanoparticle redispersion. Chinese Journal of Catalysis, 2020, 41, 998-1005.	6.9	8
103	Recycling of Solvent Allows for Multiple Rounds of Reproducible Nanoparticle Synthesis. Journal of the American Chemical Society, 2022, 144, 11646-11655.	6.6	8
104	A comparison of hierarchical Pt@CeO2/Siâ€"Al2O3 and Pd@CeO2/Siâ€"Al2O3. Catalysis Today, 2015, 253, 137-141.	2.2	7
105	Engineering of Rutheniumâ€"Iron Oxide Colloidal Heterostructures: Improved Yields in CO₂ Hydrogenation to Hydrocarbons. Angewandte Chemie, 2019, 131, 17612-17618.	1.6	7
106	Dynamics of Copper-Containing Porous Organic Framework Catalysts Reveal Catalytic Behavior Controlled by the Polymer Structure. ACS Catalysis, 2020, 10, 9356-9365.	5.5	6
107	A General Approach for Monolayer Adsorption of High Weight Loadings of Uniform Nanocrystals on Oxide Supports. Angewandte Chemie - International Edition, 2021, 60, 7971-7979.	7.2	6
108	Investigation of the optical properties of uniform platinum, palladium, and nickel nanocrystals enables direct measurements of their concentrations in solution. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2020, 601, 125007.	2.3	6

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109	Structure, morphology and catalytic properties of pure and alloyed Auâ€"ZnO hierarchical nanostructures. RSC Advances, 2015, 5, 41920-41922.	1.7	5
110	Local Structural Distortions and Failure of the Surface-Stress â€œCoreâ€"Shellâ€• Model in Brookite Titania Nanorods. Chemistry of Materials, 2020, 32, 286-298.	3.2	5
111	Readily Constructed Glass Piston Pump for Gas Recirculation. ACS Omega, 2020, 5, 16455-16459.	1.6	5
112	A phytophotonic approach to enhanced photosynthesis. Energy and Environmental Science, 2020, 13, 4794-4807.	15.6	5
113	Formic Acid Dehydrogenation: Phosphides Strike Again. Joule, 2018, 2, 379-380.	11.7	4
114	Reducing instability in dispersed powder photocatalysis derived from variable dispersion, metallic co-catalyst morphology, and light fluctuations. Journal of Photochemistry and Photobiology, 2020, 2, 100004.	1.1	4
115	Chemically Controllable Porous Polymerâ€"Nanocrystal Composites with Hierarchical Arrangement Show Substrate Transport Selectivity. Chemistry of Materials, 2020, 32, 5904-5915.	3.2	3
116	Reply to: Practical constraints on atmospheric methane removal. Nature Sustainability, 2020, 3, 358-359.	11.5	3
117	Sulfur-treated TiO₂ shows improved alcohol dehydration activity and selectivity. Nanoscale, 2022, 14, 2848-2858.	2.8	3
118	A Combined Theoryâ€Experiment Analysis of the Surface Species in Lithiumâ€Mediated NH₃ Electrosynthesis. ChemElectroChem, 2020, 7, 1513-1513.	1.7	2
119	A General Approach for Monolayer Adsorption of High Weight Loadings of Uniform Nanocrystals on Oxide Supports. Angewandte Chemie, 2021, 133, 8050-8058.	1.6	2
120	CORE-SHELL-TYPE MATERIALS BASED ON CERIA. Catalytic Science Series, 2013, , 361-396.	0.6	1
121	Opportunities and Challenges in the Synthesis, Characterization, and Catalytic Properties of Controlled Nanostructures. Studies in Surface Science and Catalysis, 2017, 177, 1-56.	1.5	1
122	In-situ Study of Coarsening Mechanisms of Supported Metal Particles in Reducing Gas. Microscopy and Microanalysis, 2015, 21, 643-644.	0.2	0
123	Quantitative 3D Characterization of Novel Polymer-nanocrystal Hybrid Catalysts by Electron Tomography. Microscopy and Microanalysis, 2020, 26, 1136-1137.	0.2	0