Matteo Cargnello

List of Publications by Citations

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123 papers	8,689 citations	45 h-index	92 g-index
129 ext. papers	10,335 ext. citations	13.1 avg, IF	6.32 L-index

#	Paper	IF	Citations
123	Control of metal nanocrystal size reveals metal-support interface role for ceria catalysts. *Science*, **2013**, 341, 771-3	33.3	916
122	Nonaqueous synthesis of TiO2 nanocrystals using TiF4 to engineer morphology, oxygen vacancy concentration, and photocatalytic activity. *Journal of the American Chemical Society*, **2012**, 134, 6751-61	16.4	745
121	Exceptional activity for methane combustion over modular Pd@CeO2 subunits on functionalized Al2O3. *Science*, **2012**, 337, 713-7	33.3	665
120	A rigorous electrochemical ammonia synthesis protocol with quantitative isotope measurements. *Nature*, **2019**, 570, 504-508	50.4	617
119	Electrochemical Ammonia Synthesis□The Selectivity Challenge. *ACS Catalysis*, **2017**, 7, 706-709	13.1	442
118	Solution-phase synthesis of titanium dioxide nanoparticles and nanocrystals. *Chemical Reviews*, **2014**, 114, 9319-45	68.1	291
117	Ammonia synthesis from N2 and H2O using a lithium cycling electrification strategy at atmospheric pressure. *Energy and Environmental Science*, **2017**, 10, 1621-1630	35.4	236
116	Embedded phases: a way to active and stable catalysts. *ChemSusChem*, **2010**, 3, 24-42	8.3	219
115	CuO(x)-TiO2 photocatalysts for H2 production from ethanol and glycerol solutions. *Journal of Physical Chemistry A*, **2010**, 114, 3916-25	2.8	218
114	Synthesis of dispersible Pd@CeO(2) core-shell nanostructures by self-assembly. *Journal of the American Chemical Society*, **2010**, 132, 1402-9	16.4	191
113	Dynamical Observation and Detailed Description of Catalysts under Strong Metal-Support Interaction. *Nano Letters*, **2016**, 16, 4528-34	11.5	160
112	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, 6906-11	16.4	156
111	Mechanistic Understanding and the Rational Design of Sinter-Resistant Heterogeneous Catalysts. *ACS Catalysis*, **2017**, 7, 7156-7173	13.1	151
110	Substitutional doping in nanocrystal superlattices. *Nature*, **2015**, 524, 450-3	50.4	133
109	Low-Temperature Restructuring of CeO-Supported Ru Nanoparticles Determines Selectivity in CO Catalytic Reduction. *Journal of the American Chemical Society*, **2018**, 140, 13736-13745	16.4	127
108	Photocatalytic H2 and Added-Value By-Products □The Role of Metal Oxide Systems in Their Synthesis from Oxygenates. *European Journal of Inorganic Chemistry*, **2011**, 2011, 4309-4323	2.3	114
107	Systematic Structure□Property Relationship Studies in Palladium-Catalyzed Methane Complete Combustion. *ACS Catalysis*, **2017**, 7, 7810-7821	13.1	110

106	Photocatalytic Hydrogen Evolution from Substoichiometric Colloidal WO3□ Nanowires. *ACS Energy Letters*, **2018**, 3, 1904-1910	20.1	109
105	Supported Catalyst Deactivation by Decomposition into Single Atoms Is Suppressed by Increasing Metal Loading. *Nature Catalysis*, **2019**, 2,	36.5	99
104	Multiwalled carbon nanotubes drive the activity of metal@oxide core-shell catalysts in modular nanocomposites. *Journal of the American Chemical Society*, **2012**, 134, 11760-6	16.4	97
103	Methane Oxidation on [email□protected]2/Si□Al2O3 Is Enhanced by Surface Reduction of ZrO2. *ACS Catalysis*, **2014**, 4, 3902-3909	13.1	96
102	Heterogeneous catalysts need not be so "heterogeneous": monodisperse Pt nanocrystals by combining shape-controlled synthesis and purification by colloidal recrystallization. *Journal of the American Chemical Society*, **2013**, 135, 2741-7	16.4	93
101	Exceptional thermal stability of Pd@CeO2 core-shell catalyst nanostructures grafted onto an oxide surface. *Nano Letters*, **2013**, 13, 2252-7	11.5	90
100	Electrolyte Engineering for Efficient Electrochemical Nitrate Reduction to Ammonia on a Titanium Electrode. *ACS Sustainable Chemistry and Engineering*, **2020**, 8, 2672-2681	8.3	88
99	Strategies toward Selective Electrochemical Ammonia Synthesis. *ACS Catalysis*, **2019**, 9, 8316-8324	13.1	88
98	Uniform Pt/Pd Bimetallic Nanocrystals Demonstrate Platinum Effect on Palladium Methane Combustion Activity and Stability. *ACS Catalysis*, **2017**, 7, 4372-4380	13.1	87
97	A Versatile Approach to the Synthesis of Functionalized Thiol-Protected Palladium Nanoparticles. *Chemistry of Materials*, **2011**, 23, 3961-3969	9.6	86
96	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, 3966-71	11.5	86
95	Active and Stable Embedded [email□protected]2 Catalysts for Preferential Oxidation of CO. *Chemistry of Materials*, **2010**, 22, 4335-4345	9.6	85
94	Dynamic structural evolution of supported palladium-ceria core-shell catalysts revealed by in situ electron microscopy. *Nature Communications*, **2015**, 6, 7778	17.4	83
93	Synthesis and Stability of [email□protected]2 Core□Shell Catalyst Films in Solid Oxide Fuel Cell Anodes. *ACS Catalysis*, **2013**, 3, 1801-1809	13.1	82
92	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	16.4	81
91	Co-axial heterostructures integrating palladium/titanium dioxide with carbon nanotubes for efficient electrocatalytic hydrogen evolution. *Nature Communications*, **2016**, 7, 13549	17.4	76
90	Novel embedded Pd@CeO(2) catalysts: a way to active and stable catalysts. *Dalton Transactions*, **2010**, 39, 2122-7	4.3	72
89	High-temperature crystallization of nanocrystals into three-dimensional superlattices. *Nature*, **2017** , 548, 197-201	50.4	68

88	Colloidal nanocrystals for heterogeneous catalysis. *Nano Today*, **2019**, 24, 15-47	17.9	68
87	A versatile route to core-shell catalysts: synthesis of dispersible M@oxide (M=Pd, Pt; oxide=TiO2, ZrO2) nanostructures by self-assembly. *ChemSusChem*, **2012**, 5, 140-8	8.3	65
86	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	16.4	64
85	Study of the Water-Gas-Shift Reaction on 2/Al2O3 Core-Shell Catalysts. *Journal of Physical Chemistry C*, **2011**, 115, 915-919	3.8	60
84	Synergistic oxygen evolving activity of a TiO2-rich reconstructed SrTiO3(001) surface. *Journal of the American Chemical Society*, **2015**, 137, 2939-47	16.4	55
83	A Versatile Method for Ammonia Detection in a Range of Relevant Electrolytes via Direct Nuclear Magnetic Resonance Techniques. *ACS Catalysis*, **2019**, 9, 5797-5802	13.1	54
82	Probing Atomic Distributions in Mono- and Bimetallic Nanoparticles by Supervised Machine Learning. *Nano Letters*, **2019**, 19, 520-529	11.5	54
81	Opportunities for Tailoring Catalytic Properties Through Metal-Support Interactions. *Catalysis Letters*, **2012**, 142, 1043-1048	2.8	52
80	Highly Active and Thermally Stable Core-Shell Catalysts for Solid Oxide Fuel Cells. *Journal of the Electrochemical Society*, **2011**, 158, B596	3.9	48
79	Modular Pd/Zeolite Composites Demonstrating the Key Role of Support Hydrophobic/Hydrophilic Character in Methane Catalytic Combustion. *ACS Catalysis*, **2019**, 9, 4742-4753	13.1	47
78	Colloidal Nanocrystals as Building Blocks for Well-Defined Heterogeneous Catalysts. *Chemistry of Materials*, **2019**, 31, 576-596	9.6	44
77	Engineering Localized Surface Plasmon Interactions in Gold by Silicon Nanowire for Enhanced Heating and Photocatalysis. *Nano Letters*, **2017**, 17, 1839-1845	11.5	43
76	Dendron-Mediated Engineering of Interparticle Separation and Self-Assembly in Dendronized Gold Nanoparticles Superlattices. *Journal of the American Chemical Society*, **2015**, 137, 10728-34	16.4	41
75	Transition state and product diffusion control by polymer-nanocrystal hybrid catalysts. *Nature Catalysis*, **2019**, 2, 852-863	36.5	41
74	Hierarchical Materials Design by Pattern Transfer Printing of Self-Assembled Binary Nanocrystal Superlattices. *Nano Letters*, **2017**, 17, 1387-1394	11.5	37
73	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	9.6	36
72	Alcohol induced ultra-fine dispersion of Pt on tuned morphologies of CeO2 for CO oxidation. *Applied Catalysis B: Environmental*, **2013**, 130-131, 121-131	21.8	35
71	Quantifying "Softness" of Organic Coatings on Gold Nanoparticles Using Correlated Small-Angle X-ray and Neutron Scattering. *Nano Letters*, **2015**, 15, 8008-12	11.5	34

70	A Combined Theory-Experiment Analysis of the Surface Species in Lithium-Mediated NH3 Electrosynthesis. *ChemElectroChem*, **2020**, 7, 1542-1549	4.3	34
69	High-temperature calcination improves the catalytic properties of alumina-supported Pd@ceria prepared by self assembly. *Journal of Catalysis*, **2013**, 306, 109-115	7.3	29
68	Engineering of Ruthenium-Iron Oxide Colloidal Heterostructures: Improved Yields in CO Hydrogenation to Hydrocarbons. *Angewandte Chemie - International Edition*, **2019**, 58, 17451-17457	16.4	28
67	Tailoring photocatalytic nanostructures for sustainable hydrogen production. *Nanoscale*, **2014**, 6, 97-105	7.7	28
66	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	7.3	28
65	Supported platinum□inc oxide core□hell nanoparticle catalysts for methanol steam reforming. *Journal of Materials Chemistry A*, **2014**, 2, 19509-19514	13	27
64	Deconvoluting Transient Water Effects on the Activity of Pd Methane Combustion Catalysts. *Industrial & Engineering Chemistry Research*, **2018**, 57, 10261-10268	3.9	26
63	Fast Nanorod Diffusion through Entangled Polymer Melts. *ACS Macro Letters*, **2015**, 4, 952-956	6.6	25
62	In Situ X-ray Scattering Guides the Synthesis of Uniform PtSn Nanocrystals. *Nano Letters*, **2018**, 18, 4053-4057	11.5	25
61	Playing with structures at the nanoscale: designing catalysts by manipulation of clusters and nanocrystals as building blocks. *ChemPhysChem*, **2013**, 14, 3869-77	3.2	24
60	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	9.6	23
59	Thermal and photochemical reactions of methanol on nanocrystalline anatase TiO2 thin films. *Physical Chemistry Chemical Physics*, **2015**, 17, 17190-201	3.6	22
58	Enhanced energy transfer in quasi-quaternary nanocrystal superlattices. *Advanced Materials*, **2014**, 26, 2419-23	24	21
57	Shape-dependence of the thermal and photochemical reactions of methanol on nanocrystalline anatase TiO2. *Surface Science*, **2016**, 654, 1-7	1.8	20
56	Enhanced Catalytic Activity for Methane Combustion through in Situ Water Sorption. *ACS Catalysis*, **2020**, 10, 8157-8167	13.1	19
55	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	35.4	18
54	X-ray mapping of nanoparticle superlattice thin films. *ACS Nano*, **2014**, 8, 12843-50	16.7	18
53	Engineering uniform nanocrystals: Mechanism of formation and self-assembly into bimetallic nanocrystal superlattices. *AIChE Journal*, **2016**, 62, 392-398	3.6	18

52	Palladium oxidation leads to methane combustion activity: Effects of particle size and alloying with platinum. *Journal of Chemical Physics*, **2019**, 151, 154703	3.9	17
51	Polycatenar Ligand Control of the Synthesis and Self-Assembly of Colloidal Nanocrystals. *Journal of the American Chemical Society*, **2016**, 138, 10508-15	16.4	17
50	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	9.5	15
49	Elucidating the synergistic mechanism of nickel-molybdenum electrocatalysts for the hydrogen evolution reaction. *MRS Communications*, **2016**, 6, 241-246	2.7	15
48	Steam-created grain boundaries for methane C-H activation in palladium catalysts. *Science*, **2021**, 373, 1518-1523	33.3	15
47	Langmuir-Blodgett Deposition of Graphene Oxide-Identifying Marangoni Flow as a Process that Fundamentally Limits Deposition Control. *Langmuir*, **2018**, 34, 9683-9691	4	14
46	Design of Organic/Inorganic Hybrid Catalysts for Energy and Environmental Applications. *ACS Central Science*, **2020**, 6, 1916-1937	16.8	14
45	Synthesis, Characterization, and Light-Induced Spatial Charge Separation in Janus Graphene Oxide. *Chemistry of Materials*, **2018**, 30, 2084-2092	9.6	13
44	Low-Temperature Methane Partial Oxidation to Syngas with Modular Nanocrystal Catalysts. *ACS Applied Nano Materials*, **2018**, 1, 5258-5267	5.6	13
43	Au@TiO2 Core-Shell Nanostructures with High Thermal Stability. *Catalysis Letters*, **2014**, 144, 1939-1945	2.8	13
42	Understanding the preferential oxidation of carbon monoxide (PrOx) using size-controlled Au nanocrystal catalyst. *AIChE Journal*, **2018**, 64, 3159-3167	3.6	13
41	Nanoscale Spatial Distribution of Supported Nanoparticles Controls Activity and Stability in Powder Catalysts for CO Oxidation and Photocatalytic H Evolution. *Journal of the American Chemical Society*, **2020**, 142, 14481-14494	16.4	12
40	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	11.5	10
39	Nanorod Mobility Influences Polymer Diffusion in Polymer Nanocomposites. *ACS Macro Letters*, **2017**, 6, 869-874	6.6	10
38	Atmospheric methane removal: a research agenda. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2021**, 379, 20200454	3	10
37	Determining number of sites on ceria stabilizing single atoms via metal nanoparticle redispersion. *Chinese Journal of Catalysis*, **2020**, 41, 998-1005	11.3	8
36	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	3.9	8
35	Size-controlled nanocrystals reveal spatial dependence and severity of nanoparticle coalescence and Ostwald ripening in sintering phenomena. *Nanoscale*, **2021**, 13, 930-938	7.7	8

34	General Self-Assembly Method for Deposition of Graphene Oxide into Uniform Close-Packed Monolayer Films. *Langmuir*, **2019**, 35, 4460-4470	4	7
33	Formic acid oxidation boosted by Rh single atoms. *Nature Nanotechnology*, **2020**, 15, 346-347	28.7	7
32	Nanoparticle diffusion during gelation of tetra poly(ethylene glycol) provides insight into nanoscale structural evolution. *Soft Matter*, **2020**, 16, 2256-2265	3.6	7
31	A comparison of hierarchical Pt@CeO_2/Si–Al_2O_3 and Pd@CeO_2/Si–Al_2O_3. *Catalysis Today*, **2015**, 253, 137-141	5.3	7
30	Steering CO hydrogenation toward C-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,	11.5	6
29	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,	11.5	6
28	Structure, morphology and catalytic properties of pure and alloyed Au–ZnO hierarchical nanostructures. *RSC Advances*, **2015**, 5, 41920-41922	3.7	5
27	Dilute Pd/Au Alloys Replace Au/TiO_2 Interface for Selective Oxidation Reactions. *ACS Catalysis*, **2020**, 10, 1716-1720	13.1	5
26	Engineering of Ruthenium–Iron Oxide Colloidal Heterostructures: Improved Yields in CO_2 Hydrogenation to Hydrocarbons. *Angewandte Chemie*, **2019**, 131, 17612-17618	3.6	4
25	Insight into restructuring of Pd-Au nanoparticles using EXAFS. *Radiation Physics and Chemistry*, **2020**, 175, 108304	2.5	4
24	Monolayer Support Control and Precise Colloidal Nanocrystals Demonstrate Metal-Support Interactions in Heterogeneous Catalysts. *Advanced Materials*, **2021**, 33, e2104533	24	4
23	Insights and comparison of structure–property relationships in propane and propene catalytic combustion on Pd- and Pt-based catalysts. *Journal of Catalysis*, **2021**, 401, 89-101	7.3	4
22	Reply to: Practical constraints on atmospheric methane removal. *Nature Sustainability*, **2020**, 3, 358-359	22.1	3
21	Formic Acid Dehydrogenation: Phosphides Strike Again. *Joule*, **2018**, 2, 379-380	27.8	3
20	Readily Constructed Glass Piston Pump for Gas Recirculation. *ACS Omega*, **2020**, 5, 16455-16459	3.9	3
19	Colloidal Platinum-Copper Nanocrystal Alloy Catalysts Surpass Platinum in Low-Temperature Propene Combustion.. *Journal of the American Chemical Society*, **2022**,	16.4	2
18	Microkinetic Modeling of Propene Combustion on a Stepped, Metallic Palladium Surface and the Importance of Oxygen Coverage. *ACS Catalysis*, **2022**, 12, 1742-1757	13.1	2
17	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	5.1	2

16	Local Structural Distortions and Failure of the Surface-Stress Core Shell Model in Brookite Titania Nanorods. *Chemistry of Materials*, **2020**, 32, 286-298	9.6	2
15	Dynamics of Copper-Containing Porous Organic Framework Catalysts Reveal Catalytic Behavior Controlled by the Polymer Structure. *ACS Catalysis*, **2020**, 10, 9356-9365	13.1	2
14	Rationalizing an Unexpected Structure Sensitivity in Heterogeneous Catalysis CO Hydrogenation over Rh as a Case Study. *ACS Catalysis*, **2021**, 11, 5189-5201	13.1	2
13	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	13.1	2
12	Chemically Controllable Porous Polymer Nanocrystal Composites with Hierarchical Arrangement Show Substrate Transport Selectivity. *Chemistry of Materials*, **2020**, 32, 5904-5915	9.6	1
11	CORE-SHELL-TYPE MATERIALS BASED ON CERIA. *Catalytic Science Series*, **2013**, 361-396	0.4	1
10	Photocatalysis by Nanostructured TiO2-based Semiconductors **2012**, 89		1
9	A General Approach for Monolayer Adsorption of High Weight Loadings of Uniform Nanocrystals on Oxide Supports. *Angewandte Chemie*, **2021**, 133, 8050-8058	3.6	1
8	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	0.8	0
7	A Combined Theory-Experiment Analysis of the Surface Species in Lithium-Mediated NH3 Electrosynthesis. *ChemElectroChem*, **2020**, 7, 1513-1513	4.3	0
6	Opportunities and Challenges in the Synthesis, Characterization, and Catalytic Properties of Controlled Nanostructures. *Studies in Surface Science and Catalysis*, **2017**, 177, 1-56	1.8	0
5	Sulfur-treated TiO shows improved alcohol dehydration activity and selectivity.. *Nanoscale*, **2022**, 14, 2848-2858	7.7	0
4	A phytophotonic approach to enhanced photosynthesis. *Energy and Environmental Science*, **2020**, 13, 4794-4807	35.4	0
3	A General Approach for Monolayer Adsorption of High Weight Loadings of Uniform Nanocrystals on Oxide Supports. *Angewandte Chemie - International Edition*, **2021**, 60, 7971-7979	16.4	0
2	Quantitative 3D Characterization of Novel Polymer-nanocrystal Hybrid Catalysts by Electron Tomography. *Microscopy and Microanalysis*, **2020**, 26, 1136-1137	0.5	
1	In-situ Study of Coarsening Mechanisms of Supported Metal Particles in Reducing Gas. *Microscopy and Microanalysis*, **2015**, 21, 643-644	0.5	