Heinz Frei

List of Publications by Year
in descending order

60 papers	5,726 citations	109321 35 h-index	118850 62 g-index
63 all docs	63 docs citations	63 times ranked	7146 citing authors

#	Article	IF	Citations
1	Nanostructured Cobalt Oxide Clusters in Mesoporous Silica as Efficient Oxygenâ€Evolving Catalysts. Angewandte Chemie - International Edition, 2009, 48, 1841-1844.	13.8	720
2	Time-resolved observations of water oxidation intermediates on a cobalt oxide nanoparticle catalyst. Nature Chemistry, 2014, 6, 362-367.	13.6	682
3	Advancing the Frontiers in Nanocatalysis, Biointerfaces, and Renewable Energy Conversion by Innovations of Surface Techniques. Journal of the American Chemical Society, 2009, 131, 16589-16605.	13.7	494
4	Nanostructured cobalt and manganese oxide clusters as efficient water oxidation catalysts. Energy and Environmental Science, 2010, 3, 1018.	30.8	488
5	Nanostructured manganese oxide clusters supported on mesoporous silica as efficient oxygen-evolving catalysts. Chemical Communications, 2010, 46, 2920.	4.1	304
6	Photochemical CO2Splitting by Metal-to-Metal Charge-Transfer Excitation in Mesoporous ZrCu(I)-MCM-41 Silicate Sieve. Journal of the American Chemical Society, 2005, 127, 1610-1611.	13.7	238
7	Photochemical and FT-IR Probing of the Active Site of Hydrogen Peroxide in Ti Silicalite Sieve. Journal of the American Chemical Society, 2002, 124, 9292-9298.	13.7	191
8	Coupling carbon dioxide reduction with water oxidation in nanoscale photocatalytic assemblies. Chemical Society Reviews, 2016, 45, 3221-3243.	38.1	124
9	Direct Observation of a Hydroperoxide Surface Intermediate upon Visible Light-Driven Water Oxidation at an Ir Oxide Nanocluster Catalyst by Rapid-Scan FT-IR Spectroscopy. Journal of the American Chemical Society, 2011, 133, 12976-12979.	13.7	118
10	CO2Splitting by H2O to CO and O2under UV Light in TiMCM-41 Silicate Sieve. Journal of Physical Chemistry B, 2004, 108, 18269-18273.	2.6	117
11	Photocatalyzed oxidation in zeolite cages. Catalysis Today, 1998, 41, 297-309.	4.4	111
12	Selective Photooxidation of Small Alkenes by O2 with Red Light in Zeolite Y. Journal of the American Chemical Society, 1994, 116, 1812-1820.	13.7	107
13	Selective CO2 electrocatalysis at the pseudocapacitive nanoparticle/ordered-ligand interlayer. Nature Energy, 2020, 5, 1032-1042.	39.5	99
14	Anchored Metal-to-Metal Charge-Transfer Chromophores in a Mesoporous Silicate Sieve for Visible-Light Activation of Titanium Centers. Journal of Physical Chemistry B, 2005, 109, 4929-4935.	2.6	98
15	Visible Light-Driven Water Oxidation by Ir Oxide Clusters Coupled to Single Cr Centers in Mesoporous Silica. Journal of the American Chemical Society, 2006, 128, 10668-10669.	13.7	94
16	Hierarchical Inorganic Assemblies for Artificial Photosynthesis. Accounts of Chemical Research, 2016, 49, 1634-1645.	15.6	94
17	Light Induced Carbon Dioxide Reduction by Water at Binuclear ZrOCo^{II} Unit Coupled to Ir Oxide Nanocluster Catalyst. Journal of the American Chemical Society, 2014, 136, 11034-11042.	13.7	85
18	Very strong stabilization of alkene.cntdot.O2 charge-transfer state in zeolite NaY: red-light-induced photooxidation of 2,3-dimethyl-2-butene. Journal of the American Chemical Society, 1993, 115, 7501-7502.	13.7	84

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19	Carbon Dioxide Dimer Radical Anion as Surface Intermediate of Photoinduced CO₂ Reduction at Aqueous Cu and CdSe Nanoparticle Catalysts by Rapid-Scan FT-IR Spectroscopy. Journal of the American Chemical Society, 2018, 140, 4363-4371.	13.7	84
20	Surface Proton Hopping and Fast-Kinetics Pathway of Water Oxidation on Co₃O₄ (001) Surface. ACS Catalysis, 2016, 6, 5610-5617.	11.2	83
21	CHEMISTRY: Selective Hydrocarbon Oxidation in Zeolites. Science, 2006, 313, 309-310.	12.6	68
22	Diffuse Reflectance Spectroscopy of Visible Alkene.O2 Charge-Transfer Absorptions in Zeolite Y and Determination of Photooxygenation Quantum Efficiencies. The Journal of Physical Chemistry, 1994, 98, 13403-13407.	2.9	66
23	In Situ Spectroscopy of Water Oxidation at Ir Oxide Nanocluster Driven by Visible TiOCr Charge-transfer Chromophore in Mesoporous Silica. Journal of Physical Chemistry C, 2008, 112, 16156-16159.	3.1	63
24	Visible Light Induced Hole Transport from Sensitizer to Co₃O₄ Water Oxidation Catalyst across Nanoscale Silica Barrier with Embedded Molecular Wires. Chemistry of Materials, 2013, 25, 2264-2273.	6.7	60
25	Controlled Assembly of Hetero-binuclear Sites on Mesoporous Silica: Visible Light Charge-Transfer Units with Selectable Redox Properties. Journal of Physical Chemistry C, 2008, 112, 8391-8399.	3.1	58
26	Factors and Dynamics of Cu Nanocrystal Reconstruction under CO₂ Reduction. ACS Applied Energy Materials, 2019, 2, 7744-7749.	5.1	56
27	Structure of Ni(II) and Ru(III) Ammine Complexes Grafted onto Mesoporous Silicate Sieve. Journal of Physical Chemistry B, 2003, 107, 8547-8556.	2.6	52
28	Direct Observation by Rapid-Scan FT-IR Spectroscopy of Two-Electron-Reduced Intermediate of Tetraaza Catalyst [Co^{II}N₄H(MeCN)]²⁺ Converting CO₂ to CO. Journal of the American Chemical Society, 2016, 138, 9959-9967.	13.7	52
29	Visible Light-Induced Hole Injection into Rectifying Molecular Wires Anchored on Co₃O₄ and SiO₂ Nanoparticles. Journal of the American Chemical Society, 2012, 134, 17104-17116.	13.7	49
30	Binuclear ZrOCo Metal-to-Metal Charge-Transfer Unit in Mesoporous Silica for Light-Driven CO₂ Reduction to CO and Formate. Journal of Physical Chemistry C, 2014, 118, 7874-7885.	3.1	46
31	Towards a Molecular Level Understanding of the Multi-Electron Catalysis of Water Oxidation on Metal Oxide Surfaces. Catalysis Letters, 2015, 145, 420-435.	2.6	40
32	Visible light absorption of binuclear TiOCoII charge-transfer unit assembled in mesoporous silica. Microporous and Mesoporous Materials, 2007, 103, 265-272.	4.4	39
33	Ultrafast Charge Transfer between Light Absorber and Co₃O₄ Water Oxidation Catalyst across Molecular Wires Embedded in Silica Membrane. Journal of the American Chemical Society, 2017, 139, 5458-5466.	13.7	39
34	Binuclear TiOMn charge-transfer chromophore in mesoporous silica. Dalton Transactions, 2009, , 10114.	3.3	35
35	Unusually Long Lifetime of Excited Charge-Transfer State of All-Inorganic Binuclear TiOMn^{II} Unit Anchored on Silica Nanopore Surface. Journal of Physical Chemistry C, 2010, 114, 9167-9172.	3.1	34
36	Polynuclear Photocatalysts in Nanoporous Silica for Artificial Photosynthesis. Chimia, 2009, 63, 721.	0.6	33

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37	Directed Assembly of Cuprous Oxide Nanocatalyst for CO₂ Reduction Coupled to Heterobinuclear ZrOCo^{II} Light Absorber in Mesoporous Silica. ACS Catalysis, 2015, 5, 5627-5635.	11.2	32
38	Inorganic coreâ€“shell assemblies for closing the artificial photosynthetic cycle. Faraday Discussions, 2014, 176, 233-249.	3.2	29
39	Water Oxidation Mechanisms of Metal Oxide Catalysts by Vibrational Spectroscopy of Transient Intermediates. Annual Review of Physical Chemistry, 2017, 68, 209-231.	10.8	29
40	Fabrication of Coreâ€“Shell Nanotube Array for Artificial Photosynthesis Featuring an Ultrathin Composite Separation Membrane. ACS Nano, 2018, 12, 533-541.	14.6	27
41	Nanoscale membranes that chemically isolate and electronically wire up the abiotic/biotic interface. Nature Communications, 2018, 9, 2263.	12.8	25
42	Observation of Oâ€“O Bond Forming Step of Molecular Co₄O₄ Cubane Catalyst for Water Oxidation by Rapid-Scan FT-IR Spectroscopy. ACS Catalysis, 2020, 10, 2138-2147.	11.2	24
43	Excited State Electron Transfer of All-Inorganic Heterobinuclear TiOMn²⁺ Chromophore Anchored on Silica Nanoparticle Surface. Journal of Physical Chemistry C, 2014, 118, 11601-11611.	3.1	23
44	Precise Colloidal Plasmonic Photocatalysts Constructed by Multistep Photodepositions. Nano Letters, 2020, 20, 8661-8667.	9.1	20
45	Charge Transport through Organic Molecular Wires Embedded in Ultrathin Insulating Inorganic Layer. Journal of Physical Chemistry C, 2015, 119, 28326-28334.	3.1	19
46	Interfacial charge transfer in Pt-loaded TiO2 P25 photocatalysts studied by in-situ diffuse reflectance FTIR spectroscopy of adsorbed CO. Journal of Photochemistry and Photobiology A: Chemistry, 2019, 370, 84-88.	3.9	19
47	Ultrathin Amorphous Silica Membrane Enhances Proton Transfer across Solidâ€toâ€Solid Interfaces of Stacked Metal Oxide Nanolayers while Blocking Oxygen. Advanced Functional Materials, 2020, 30, 1909262.	14.9	19
48	Effects of Support, Particle Size, and Process Parameters on Co3O4Catalyzed H2O Oxidation Mediated by the [Ru(bpy)3]2+Persulfate System. ChemCatChem, 2013, 5, 550-556.	3.7	17
49	Dynamics of CO in Mesoporous Silica Monitored by Time-Resolved Step-Scan and Rapid-Scan FT-IR Spectroscopy. Journal of Physical Chemistry B, 2006, 110, 22601-22607.	2.6	15
50	Photocatalytic fuel production. Current Opinion in Electrochemistry, 2017, 2, 128-135.	4.8	11
51	Heterobinuclear Light Absorber Coupled to Molecular Wire for Charge Transport across Ultrathin Silica Membrane for Artificial Photosynthesis. ACS Applied Materials & Interfaces, 2018, 10, 31422-31432.	8.0	11
52	Structure and Orientation of Molecular Wires Embedded in Ultrathin Silica Membrane for Artificial Photosynthesis Elucidated by Polarized FT-IRRAS. Journal of Physical Chemistry C, 2019, 123, 18905-18913.	3.1	10
53	Determination of the Redox Potential of Immobilized Oxo-Bridged Metals in Porous Supports. The Tiâ€“Oâ€“Mnâ€“SBA System. Journal of Physical Chemistry C, 2012, 116, 23477-23484.	3.1	8
54	Ultrathin oxide layers for nanoscale integration of molecular light absorbers, catalysts, and complete artificial photosystems. Journal of Chemical Physics, 2019, 150, 041501.	3.0	8

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55	Water oxidation investigated by rapid-scan FT-IR spectroscopy. Current Opinion in Chemical Engineering, 2016, 12, 91-97.	7.8	7
56	Photoinduced Electron Transfer from ZrOCo Binuclear Light Absorber to Pyridine Elucidated by Transient Optical and Infrared Spectroscopy. Journal of Physical Chemistry C, 2018, 122, 20176-20185.	3.1	7
57	Controlling and Optimizing Photoinduced Charge Transfer across Ultrathin Silica Separation Membrane with Embedded Molecular Wires for Artificial Photosynthesis. ACS Applied Materials & Interfaces, 2021, 13, 23532-23546.	8.0	6
58	Photoactivation of Ti Centers in Mesoporous Silicate Sieve under Visible and UV Light. Studies in Surface Science and Catalysis, 2004, 153, 283-288.	1.5	5
59	Coupling metal oxide nanoparticle catalysts for water oxidation to molecular light absorbers. Journal of Energy Chemistry, 2017, 26, 241-249.	12.9	5
60	Spectroscopic Characterization of Î¼-Î·¹:Î·¹-Peroxo Ligands Formed by Reaction of Dioxygen with Electron-Rich Iridium Clusters. Inorganic Chemistry, 2019, 58, 14338-14348.	4.0	4