

Martin Roeb

List of Publications by Year in descending order

Source: <https://exaly.com/author-pdf/7091620/publications.pdf>

Version: 2024-02-01

131
papers

5,189
citations

76196

40
h-index

91712

69
g-index

135
all docs

135
docs citations

135
times ranked

2778
citing authors

#	ARTICLE	IF	CITATIONS
1	A review on solar thermal syngas production via redox pair-based water/carbon dioxide splitting thermochemical cycles. <i>Renewable and Sustainable Energy Reviews</i> , 2015, 42, 254-285.	8.2	316
2	Solar thermal reforming of methane feedstocks for hydrogen and syngas production—A review. <i>Renewable and Sustainable Energy Reviews</i> , 2014, 29, 656-682.	8.2	306
3	Solar water splitting for hydrogen production with monolithic reactors. <i>Solar Energy</i> , 2005, 79, 409-421.	2.9	242
4	Prospects of solar thermal hydrogen production processes. <i>International Journal of Hydrogen Energy</i> , 2009, 34, 4256-4267.	3.8	186
5	Solar-heated rotary kiln for thermochemical energy storage. <i>Solar Energy</i> , 2012, 86, 3040-3048.	2.9	165
6	Exploitation of thermochemical cycles based on solid oxide redox systems for thermochemical storage of solar heat. Part 1: Testing of cobalt oxide-based powders. <i>Solar Energy</i> , 2014, 102, 189-211.	2.9	147
7	Solar Hydrogen Production by a Two-Step Cycle Based on Mixed Iron Oxides. <i>Journal of Solar Energy Engineering, Transactions of the ASME</i> , 2006, 128, 125-133.	1.1	140
8	Test operation of a 100kW pilot plant for solar hydrogen production from water on a solar tower. <i>Solar Energy</i> , 2011, 85, 634-644.	2.9	138
9	Applications and limitations of two step metal oxide thermochemical redox cycles; a review. <i>Journal of Materials Chemistry A</i> , 2017, 5, 18951-18966.	5.2	133
10	Materials-Related Aspects of Thermochemical Water and Carbon Dioxide Splitting: A Review. <i>Materials</i> , 2012, 5, 2015-2054.	1.3	129
11	HYTHEC: An EC funded search for a long term massive hydrogen production route using solar and nuclear technologies. <i>International Journal of Hydrogen Energy</i> , 2007, 32, 1516-1529.	3.8	127
12	Solar fuels production: Two-step thermochemical cycles with cerium-based oxides. <i>Progress in Energy and Combustion Science</i> , 2019, 75, 100785.	15.8	122
13	Materials design of perovskite solid solutions for thermochemical applications. <i>Energy and Environmental Science</i> , 2019, 12, 1369-1384.	15.6	122
14	Perovskite oxides for application in thermochemical air separation and oxygen storage. <i>Journal of Materials Chemistry A</i> , 2016, 4, 13652-13659.	5.2	110
15	Economic comparison of solar hydrogen generation by means of thermochemical cycles and electrolysis. <i>International Journal of Hydrogen Energy</i> , 2008, 33, 4511-4519.	3.8	108
16	Thermochemical Solar Energy Storage Via Redox Oxides: Materials and Reactor/Heat Exchanger Concepts. <i>Energy Procedia</i> , 2014, 49, 1034-1043.	1.8	107
17	Operational strategy of a two-step thermochemical process for solar hydrogen production. <i>International Journal of Hydrogen Energy</i> , 2009, 34, 4537-4545.	3.8	94
18	Exploitation of thermochemical cycles based on solid oxide redox systems for thermochemical storage of solar heat. Part 2: Redox oxide-coated porous ceramic structures as integrated thermochemical reactors/heat exchangers. <i>Solar Energy</i> , 2015, 114, 440-458.	2.9	94

#	ARTICLE	IF	CITATIONS
19	Experimental evaluation of a pilot-scale thermochemical storage system for a concentrated solar power plant. <i>Applied Energy</i> , 2017, 189, 66-75.	5.1	92
20	Exploitation of thermochemical cycles based on solid oxide redox systems for thermochemical storage of solar heat. Part 3: Cobalt oxide monolithic porous structures as integrated thermochemical reactors/heat exchangers. <i>Solar Energy</i> , 2015, 114, 459-475.	2.9	88
21	Exploitation of thermochemical cycles based on solid oxide redox systems for thermochemical storage of solar heat. Part 4: Screening of oxides for use in cascaded thermochemical storage concepts. <i>Solar Energy</i> , 2016, 139, 695-710.	2.9	79
22	Redox chemistry of CaMnO_{3-x} and $\text{Ca}_{0.8}\text{Sr}_{0.2}\text{MnO}_{3-x}$ oxygen storage perovskites. <i>Journal of Materials Chemistry A</i> , 2017, 5, 7912-7919.	5.2	79
23	Technologies and trends in solar power and fuels. <i>Energy and Environmental Science</i> , 2011, 4, 2503.	15.6	78
24	Solar hydrogen production via sulphur based thermochemical water-splitting. <i>Solar Energy</i> , 2017, 156, 30-47.	2.9	72
25	Hydrogen production via sulfur-based thermochemical cycles: Part 2: Performance evaluation of Fe_2O_3 -based catalysts for the sulfuric acid decomposition step. <i>International Journal of Hydrogen Energy</i> , 2011, 36, 6496-6509.	3.8	71
26	Ceria Doped with Zirconium and Lanthanide Oxides to Enhance Solar Thermochemical Production of Fuels. <i>Journal of Physical Chemistry C</i> , 2015, 119, 6929-6938.	1.5	71
27	Thermogravimetric Analysis of Zirconia-Doped Ceria for Thermochemical Production of Solar Fuel. <i>American Journal of Analytical Chemistry</i> , 2013, 04, 37-45.	0.3	63
28	Redox thermodynamics and phase composition in the system SrFeO_3 – SrMnO_3 . <i>Solid State Ionics</i> , 2017, 308, 149-155.	1.3	59
29	Solar thermochemical heat storage via the $\text{Co}_3\text{O}_4/\text{CoO}$ looping cycle: Storage reactor modelling and experimental validation. <i>Solar Energy</i> , 2017, 144, 453-465.	2.9	58
30	Exploitation of thermochemical cycles based on solid oxide redox systems for thermochemical storage of solar heat. Part 6: Testing of Mn-based combined oxides and porous structures. <i>Solar Energy</i> , 2017, 149, 227-244.	2.9	52
31	Statistical thermodynamics of non-stoichiometric ceria and ceria zirconia solid solutions. <i>Physical Chemistry Chemical Physics</i> , 2016, 18, 23147-23154.	1.3	50
32	Concentrating on Solar Electricity and Fuels. <i>Science</i> , 2010, 329, 773-774.	6.0	48
33	Solar thermochemical hydrogen production using ceria zirconia solid solutions: Efficiency analysis. <i>International Journal of Hydrogen Energy</i> , 2016, 41, 19320-19328.	3.8	47
34	Oxidation and Reduction Reaction Kinetics of Mixed Cerium Zirconium Oxides. <i>Journal of Physical Chemistry C</i> , 2016, 120, 2027-2035.	1.5	47
35	Thermodynamic analysis of two-step solar water splitting with mixed iron oxides. <i>International Journal of Energy Research</i> , 2009, 33, 893-902.	2.2	44
36	Counter flow sweep gas demand for the ceria redox cycle. <i>Solar Energy</i> , 2015, 122, 1011-1022.	2.9	44

#	ARTICLE	IF	CITATIONS
37	Development and test of a solar reactor for decomposition of sulphuric acid in thermochemical hydrogen production. International Journal of Hydrogen Energy, 2012, 37, 16615-16622.	3.8	43
38	Exploitation of thermochemical cycles based on solid oxide redox systems for thermochemical storage of solar heat. Part 5: Testing of porous ceramic honeycomb and foam cascades based on cobalt and manganese oxides for hybrid sensible/thermochemical heat storage. Solar Energy, 2016, 139, 676-694.	2.9	43
39	Heat recovery concept for thermochemical processes using a solid heat transfer medium. Applied Thermal Engineering, 2014, 73, 1006-1013.	3.0	42
40	High temperature hydrogen production: Design of a 750 KW demonstration plant for a two step thermochemical cycle. Solar Energy, 2016, 135, 232-241.	2.9	41
41	Two-step thermochemical electrolysis: An approach for green hydrogen production. International Journal of Hydrogen Energy, 2021, 46, 24909-24918.	3.8	41
42	Design, development, construction and operation of a novel metal hydride compressor. International Journal of Hydrogen Energy, 2017, 42, 12364-12374.	3.8	40
43	Isothermal Water Splitting. Science, 2013, 341, 470-471.	6.0	39
44	Thermal model for the optimization of a solar rotary kiln to be used as high temperature thermochemical reactor. Solar Energy, 2013, 95, 279-289.	2.9	37
45	The importance of electron correlation for the ground state structure of porphycene and tetraoxaporphyrin-dication. Chemical Physics, 1998, 227, 331-348.	0.9	36
46	Hydrogen production via sulfur-based thermochemical cycles: Part 3: Durability and post-characterization of silicon carbide honeycomb substrates coated with metal oxide-based candidate catalysts for the sulfuric acid decomposition step. International Journal of Hydrogen Energy, 2012, 37, 8190-8203.	3.8	33
47	Development of a system model for a hydrogen production process on a solar tower. Solar Energy, 2012, 86, 99-111.	2.9	32
48	Sulphur based thermochemical cycles: Development and assessment of key components of the process. International Journal of Hydrogen Energy, 2013, 38, 6197-6204.	3.8	32
49	Tâ€“S diagram efficiency analysis of two-step thermochemical cycles for solar water splitting under various process conditions. Energy, 2014, 67, 298-308.	4.5	32
50	Analysis and improvement of a high-efficiency solar cavity reactor design for a two-step thermochemical cycle for solar hydrogen production from water. Solar Energy, 2013, 97, 26-38.	2.9	31
51	Demonstration of thermochemical oxygen pumping for atmosphere control in reduction reactions. Solar Energy, 2018, 170, 273-279.	2.9	30
52	Thermochemical oxygen pumping for improved hydrogen production in solar redox cycles. International Journal of Hydrogen Energy, 2019, 44, 9802-9810.	3.8	30
53	Hydrogen production by coupling pressurized high temperature electrolyser with solar tower technology. International Journal of Hydrogen Energy, 2017, 42, 13498-13509.	3.8	28
54	Redox Behavior of Solid Solutions in the SrFe _{1-x} Cu _x O _{3-δ} System for Application in Thermochemical Oxygen Storage and Air Separation. Energy Technology, 2019, 7, 131-139.	1.8	28

#	ARTICLE	IF	CITATIONS
55	Aluminum Remelting using Directly Solar-Heated Rotary Kilns. <i>Journal of Solar Energy Engineering, Transactions of the ASME</i> , 2001, 123, 117-124.	1.1	27
56	Solar Thermochemical Generation of Hydrogen: Development of a Receiver Reactor for the Decomposition of Sulfuric Acid. <i>Journal of Solar Energy Engineering, Transactions of the ASME</i> , 2009, 131, .	1.1	25
57	Solar power tower as heat and electricity source for a solid oxide electrolyzer: a case study. <i>International Journal of Energy Research</i> , 2015, 39, 1120-1130.	2.2	24
58	On the assessment of renewable industrial processes: Case study for solar co-production of methanol and power. <i>Applied Energy</i> , 2016, 183, 121-132.	5.1	24
59	Experimental study on sulfur trioxide decomposition in a volumetric solar receiver-reactor. <i>International Journal of Energy Research</i> , 2009, 33, 799-812.	2.2	23
60	Design of a pilot scale directly irradiated, high temperature, and low pressure moving particle cavity chamber for metal oxide reduction. <i>Solar Energy</i> , 2017, 157, 365-376.	2.9	23
61	Methanol production using hydrogen from concentrated solar energy. <i>International Journal of Hydrogen Energy</i> , 2020, 45, 26117-26125.	3.8	22
62	Hybrid Sensible/Thermochemical Solar Energy Storage Concepts Based on Porous Ceramic Structures and Redox Pair Oxides Chemistry. <i>Energy Procedia</i> , 2015, 69, 706-715.	1.8	18
63	Simulation model for the transient process behaviour of solar aluminium recycling in a rotary kiln. <i>Applied Thermal Engineering</i> , 2015, 78, 387-396.	3.0	17
64	Efficiency potential of indirectly heated solar reforming with open volumetric solar receiver. <i>Applied Thermal Engineering</i> , 2015, 87, 297-304.	3.0	17
65	Reticulated Porous Perovskite Structures for Thermochemical Solar Energy Storage. <i>Advanced Energy Materials</i> , 2022, 12, .	10.2	17
66	Thermochemical storage for CSP via redox structured reactors/heat exchangers: The RESTRUCTURE project. <i>AIP Conference Proceedings</i> , 2017, , .	0.3	16
67	Redox thermochemistry of Ca-Mn-based perovskites for oxygen atmosphere control in solar-thermochemical processes. <i>Solar Energy</i> , 2020, 198, 612-622.	2.9	16
68	Efficiency assessment of a two-step thermochemical water-splitting process based on a dynamic process model. <i>International Journal of Hydrogen Energy</i> , 2015, 40, 12108-12119.	3.8	15
69	Process modelling and heat management of the solar hybrid sulfur cycle. <i>International Journal of Hydrogen Energy</i> , 2015, 40, 4461-4473.	3.8	14
70	Design and construction of a cascading pressure reactor prototype for solar-thermochemical hydrogen production. <i>AIP Conference Proceedings</i> , 2016, , .	0.3	14
71	Moving Brick Receiver—Reactor: A Solar Thermochemical Reactor and Process Design With a Solid—Solid Heat Exchanger and On-Demand Production of Hydrogen and/or Carbon Monoxide. <i>Journal of Solar Energy Engineering, Transactions of the ASME</i> , 2019, 141, .	1.1	13
72	Modeling of a solar receiver-reactor for sulfur-based thermochemical cycles for hydrogen generation. <i>International Journal of Energy Research</i> , 2011, 35, 449-458.	2.2	12

#	ARTICLE	IF	CITATIONS
73	Cobalt Oxide-Based Structured Thermochemical Reactors/Heat Exchangers for Solar Thermal Energy Storage in Concentrated Solar Power Plants. , 2014, , .		12
74	Redox Oxides-Based Solar Thermochemistry and Its Materialization to Reactor/Heat Exchanger Concepts for Efficient Solar Energy Harvesting, Transformation and Storage. Journal of Solar Energy Engineering, Transactions of the ASME, 2019, 141, .	1.1	12
75	Storing solar energy in continuously moving redox particles â€“ Experimental analysis of charging and discharging reactors. Applied Energy, 2022, 308, 118271.	5.1	12
76	Process Simulation for Solar Steam and Dry Reforming. Energy Procedia, 2014, 49, 850-859.	1.8	11
77	Particleâ€“particle heat transfer coefficient in a binary packed bed of alumina and zirconia-ceria particles. Applied Thermal Engineering, 2016, 101, 101-111.	3.0	11
78	Available online Efficiency potential of indirectly heated solar reforming with different types of solar air receivers. Applied Thermal Engineering, 2016, 92, 202-209.	3.0	11
79	Experimental proof of concept of a pilot-scale thermochemical storage unit. AIP Conference Proceedings, 2017, , .	0.3	11
80	Solid Phase Heat Recovery and Multi Chamber Reduction for Redox Cycles. , 2014, , .		10
81	Design of a Thermochemical Storage System for Air-operated Solar Tower Power Plants. Energy Procedia, 2015, 69, 1039-1048.	1.8	10
82	Entropy Analysis of Solar Two-Step Thermochemical Cycles for Water and Carbon Dioxide Splitting. Entropy, 2016, 18, 24.	1.1	10
83	Fabrication and testing of CONTISOL: A new receiver-reactor for day and night solar thermochemistry. Applied Thermal Engineering, 2017, 127, 46-57.	3.0	10
84	Oxide particles as combined heat storage medium and sulphur trioxide decomposition catalysts for solar hydrogen production through sulphur cycles. International Journal of Hydrogen Energy, 2019, 44, 9830-9840.	3.8	10
85	Kinetic investigations of the hydrogen production step of a thermochemical cycle using mixed iron oxides coated on ceramic substrates. International Journal of Energy Research, 2009, 34, n/a-n/a.	2.2	9
86	Material Analysis of Coated Siliconized Silicon Carbide (SiSiC) Honeycomb Structures for Thermochemical Hydrogen Production. Materials, 2013, 6, 421-436.	1.3	9
87	Modelling and scaling analysis of a solar reactor for sulphuric acid cracking in a hybrid sulphur cycle process for thermochemical hydrogen production. International Journal of Hydrogen Energy, 2016, 41, 8008-8019.	3.8	9
88	Citric acid auto-combustion synthesis of Ti-containing perovskites via aqueous precursors. Solid State Ionics, 2018, 315, 92-97.	1.3	9
89	HYDROSOL-PLANT: Structured redox reactors for H2 production from solar thermochemical H2O splitting. AIP Conference Proceedings, 2018, , .	0.3	8
90	Solar rotary kiln for continuous treatment of particle material: Chemical experiments from micro to milli meter particle size. AIP Conference Proceedings, 2020, , .	0.3	7

#	ARTICLE	IF	CITATIONS
91	Study of a new receiver-reactor cavity system with multiple mobile redox units for solar thermochemical water splitting. <i>Solar Energy</i> , 2022, 235, 118-128.	2.9	7
92	Simulation of a Solar Receiver-Reactor for Hydrogen Production. , 2009, , .		6
93	Potential of hybridisation of the thermochemical hybrid-sulphur cycle for the production of hydrogen by using nuclear and solar energy in the same plant. <i>International Journal of Nuclear Hydrogen Production and Applications</i> , 2011, 2, 178.	0.2	6
94	Modeling of a Solar Receiver for Superheating Sulfuric Acid. <i>Journal of Solar Energy Engineering, Transactions of the ASME</i> , 2016, 138, .	1.1	6
95	Efficiency assessment of solar redox reforming in comparison to conventional reforming. <i>International Journal of Hydrogen Energy</i> , 2020, 45, 4137-4151.	3.8	6
96	Solar Hydrogen Production by a Two-Step Cycle Based on Mixed Iron Oxides. , 2005, , 671.		5
97	Solar Thermal Water Splitting. , 2013, , 63-86.		5
98	Sulfur Based Thermochemical Energy Storage for Concentrated Solar Power. , 2013, , .		5
99	A solar receiver-storage modular cascade based on porous ceramic structures for hybrid sensible/thermochemical solar energy storage. <i>AIP Conference Proceedings</i> , 2016, , .	0.3	5
100	Experimental and numerical analysis of a solar rotary kiln for continuous treatment of particle material. <i>AIP Conference Proceedings</i> , 2018, , .	0.3	5
101	Oxygen Crossover in Solidâ€“Solid Heat Exchangers for Solar Water and Carbon Dioxide Splitting: A Thermodynamic Analysis. <i>Journal of Energy Resources Technology, Transactions of the ASME</i> , 2021, 143, .	1.4	5
102	A multicriteria approach for evaluating high temperature hydrogen production processes. <i>International Journal of Multicriteria Decision Making</i> , 2011, 1, 177.	0.1	4
103	A particle receiver-driven thermochemical cycle employing elemental sulphur for solar thermochemical energy storage: Investigation of particles as concentrated sunlight harvesting media and sulphur trioxide splitting catalysts. <i>Solar Energy</i> , 2022, 234, 21-38.	2.9	4
104	Oxides and porous structures based on earth-abundant elements for hybrid sensible/thermochemical solar energy storage in air-operated solar thermal power plants. <i>AIP Conference Proceedings</i> , 2018, , .	0.3	3
105	Solar energy conversion and storage through sulphur-based thermochemical cycles implemented on centrifugal particle receivers. <i>AIP Conference Proceedings</i> , 2020, , .	0.3	3
106	Oxidation kinetics of La and Yb incorporated Zr-doped ceria for solar thermochemical fuel production in the context of dopant ionic radius and valence. <i>Open Ceramics</i> , 2022, 10, 100269.	1.0	3
107	Simulation of a Volumetric Solar Receiver-Reactor for Hydrogen Producing Thermochemical Cycles. , 2009, , .		2
108	Multi-Scale Modelling of a Solar Reactor for the High-Temperature Step of a Sulphur-Iodine-Based Water Splitting Cycle. , 2012, , .		2

#	ARTICLE	IF	CITATIONS
109	Hybrid Sensible/Thermochemical Storage of Solar Energy in Cascades of Redox-Oxide-Pair-Based Porous Ceramics. , 2015, , .		2
110	SolarSyngas: Results from a virtual institute developing materials and key components for solar thermochemical fuel production. AIP Conference Proceedings, 2016, , .	0.3	2
111	Performance Analysis and Optimization of Solar Thermochemical Waterâ€šplitting Cycle with Single and Multiple Receivers. Energy Technology, 0, , 2100220.	1.8	2
112	Investigation of Process Efficiency of an Indirectly Heated Solar Reformer. Computer Aided Chemical Engineering, 2014, 34, 459-464.	0.3	2
113	Solar Aluminum Recycling in a Directly Heated Rotary Kiln. , 2016, , 235-240.		2
114	Numerical Optimization of a Volumetric Solar Receiver-Reactor for Thermochemical Hydrogen Generation via Decomposition of Sulfur Trioxide. , 2010, , .		1
115	Numerical analysis of operation conditions and design aspects of a sulfur trioxide decomposer for solar energy conversion. International Journal of Energy Research, 2012, 36, 798-808.	2.2	1
116	Solar-Aided Syngas Production via Two-Step, Redox-Pair-Based Thermochemical Cycles. , 2015, , 475-513.		1
117	Mitigation methods for errors in oxygen measurement with redox cycling of materials for hydrogen and syngas production. International Journal of Hydrogen Energy, 2018, 43, 9165-9180.	3.8	1
118	4.18 Solar Fuels. , 2018, , 733-761.		1
119	Solar Thermochemical Generation of Hydrogen: Development of a Receiver Reactor for the Decomposition of Sulfuric Acid. , 2007, , .		1
120	Investigations of the Regeneration Step of a Thermochemical Cycle Using Mixed Iron Oxides Coated on SiSiC Substrates. , 2011, , .		1
121	Ammonia and nitrogen-based fertilizer production by solar-thermochemical processes. AIP Conference Proceedings, 2020, , .	0.3	1
122	Solar thermal methane reforming. Advances in Chemical Engineering, 2021, 58, 91-130.	0.5	1
123	Porous Materials for Solar Energy Harvesting, Transformation, and Storage. , 2022, , 245-283.		1
124	Solar thermochemical energy storage in elemental sulphur: Design, development and construction of a lab-scale sulphuric acid splitting reactor powered by hot ceramic particles. AIP Conference Proceedings, 2022, , .	0.3	1
125	Double-Focus Configuration at DLR Solar Furnace for Operating a Continuous Reactor. , 2006, , 29.		0
126	Examples of Solar Thermal Fuel Production. , 2011, , .		0

#	ARTICLE	IF	CITATIONS
127	Modeling of a Solar Receiver for Superheating Sulfuric Acid. , 2015, , .		0
128	Thermodynamic Model of a Solar Receiver for Superheating of Sulfur Trioxide and Steam at Pilot Plant Scale. , 2016, , .		0
129	Modeling, simulation and economic analysis of CSP-driven solar fuel plant for diesel and gasoline production. AIP Conference Proceedings, 2019, , .	0.3	0
130	Porous Materials for Solar Energy Harvesting, Transformation, and Storage. , 2021, , 1-39.		0
131	Efficient Solar Thermal Processes From Carbon Based to Carbon Free Hydrogen Production. , 2006, , .		0