Martin Roeb

List of Publications by Year
in descending order

131	5,189	40	69
papers	citations	h-index	g-index
		76326	91884

135	135	135	2778
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	A review on solar thermal syngas production via redox pair-based water/carbon dioxide splitting thermochemical cycles. Renewable and Sustainable Energy Reviews, 2015, 42, 254-285.	16.4	316
2	Solar thermal reforming of methane feedstocks for hydrogen and syngas productionâ€"A review. Renewable and Sustainable Energy Reviews, 2014, 29, 656-682.	16.4	306
3	Solar water splitting for hydrogen production with monolithic reactors. Solar Energy, 2005, 79, 409-421.	6.1	242
4	Prospects of solar thermal hydrogen production processes. International Journal of Hydrogen Energy, 2009, 34, 4256-4267.	7.1	186
5	Solar-heated rotary kiln for thermochemical energy storage. Solar Energy, 2012, 86, 3040-3048.	6.1	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. Solar Energy, 2014, 102, 189-211.	6.1	147
7	Solar Hydrogen Production by a Two-Step Cycle Based on Mixed Iron Oxides. Journal of Solar Energy Engineering, Transactions of the ASME, 2006, 128, 125-133.	1.8	140
8	Test operation of a 100kW pilot plant for solar hydrogen production from water on a solar tower. Solar Energy, 2011, 85, 634-644.	6.1	138
9	Applications and limitations of two step metal oxide thermochemical redox cycles; a review. Journal of Materials Chemistry A, 2017, 5, 18951-18966.	10.3	133
10	Materials-Related Aspects of Thermochemical Water and Carbon Dioxide Splitting: A Review. Materials, 2012, 5, 2015-2054.	2.9	129
11	HYTHEC: An EC funded search for a long term massive hydrogen production route using solar and nuclear technologies. International Journal of Hydrogen Energy, 2007, 32, 1516-1529.	7.1	127
12	Solar fuels production: Two-step thermochemical cycles with cerium-based oxides. Progress in Energy and Combustion Science, 2019, 75, 100785.	31.2	122
13	Materials design of perovskite solid solutions for thermochemical applications. Energy and Environmental Science, 2019, 12, 1369-1384.	30.8	122
14	Perovskite oxides for application in thermochemical air separation and oxygen storage. Journal of Materials Chemistry A, 2016, 4, 13652-13659.	10.3	110
15	Economic comparison of solar hydrogen generation by means of thermochemical cycles and electrolysis. International Journal of Hydrogen Energy, 2008, 33, 4511-4519.	7.1	108
16	Thermochemical Solar Energy Storage Via Redox Oxides: Materials and Reactor/Heat Exchanger Concepts. Energy Procedia, 2014, 49, 1034-1043.	1.8	107
17	Operational strategy of a two-step thermochemical process for solar hydrogen production. International Journal of Hydrogen Energy, 2009, 34, 4537-4545.	7.1	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. Solar Energy, 2015, 114, 440-458.	6.1	94

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19	Experimental evaluation of a pilot-scale thermochemical storage system for a concentrated solar power plant. Applied Energy, 2017, 189, 66-75.	10.1	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. Solar Energy, 2015, 114, 459-475.	6.1	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. Solar Energy, 2016, 139, 695-710.	6.1	79
22	Redox chemistry of CaMnO₃ and Ca_{0.8}Sr_{0.2}MnO₃ oxygen storage perovskites. Journal of Materials Chemistry A, 2017, 5, 7912-7919.	10.3	79
23	Technologies and trends in solar power and fuels. Energy and Environmental Science, 2011, 4, 2503.	30.8	78
24	Solar hydrogen production via sulphur based thermochemical water-splitting. Solar Energy, 2017, 156, 30-47.	6.1	72
25	Hydrogen production via sulfur-based thermochemical cycles: Part 2: Performance evaluation of Fe2O3-based catalysts for the sulfuric acid decomposition step. International Journal of Hydrogen Energy, 2011, 36, 6496-6509.	7.1	71
26	Ceria Doped with Zirconium and Lanthanide Oxides to Enhance Solar Thermochemical Production of Fuels. Journal of Physical Chemistry C, 2015, 119, 6929-6938.	3.1	71
27	Thermogravimetric Analysis of Zirconia-Doped Ceria for Thermochemical Production of Solar Fuel. American Journal of Analytical Chemistry, 2013, 04, 37-45.	0.9	63
28	Redox thermodynamics and phase composition in the system SrFeO3Î´ â€" SrMnO3Î´. Solid State Ionics, 2017, 308, 149-155.	2.7	59
29	Solar thermochemical heat storage via the Co3O4/CoO looping cycle: Storage reactor modelling and experimental validation. Solar Energy, 2017, 144, 453-465.	6.1	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. Solar Energy, 2017, 149, 227-244.	6.1	52
31	Statistical thermodynamics of non-stoichiometric ceria and ceria zirconia solid solutions. Physical Chemistry Chemical Physics, 2016, 18, 23147-23154.	2.8	50
32	Concentrating on Solar Electricity and Fuels. Science, 2010, 329, 773-774.	12.6	48
33	Solar thermochemical hydrogen production using ceria zirconia solid solutions: Efficiency analysis. International Journal of Hydrogen Energy, 2016, 41, 19320-19328.	7.1	47
34	Oxidation and Reduction Reaction Kinetics of Mixed Cerium Zirconium Oxides. Journal of Physical Chemistry C, 2016, 120, 2027-2035.	3.1	47
35	Thermodynamic analysis of two-step solar water splitting with mixed iron oxides. International Journal of Energy Research, 2009, 33, 893-902.	4.5	44
36	Counter flow sweep gas demand for the ceria redox cycle. Solar Energy, 2015, 122, 1011-1022.	6.1	44

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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.	7.1	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.	6.1	43
39	Heat recovery concept for thermochemical processes using a solid heat transfer medium. Applied Thermal Engineering, 2014, 73, 1006-1013.	6.0	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.	6.1	41
41	Two-step thermochemical electrolysis: An approach for green hydrogen production. International Journal of Hydrogen Energy, 2021, 46, 24909-24918.	7.1	41
42	Design, development, construction and operation of a novel metal hydride compressor. International Journal of Hydrogen Energy, 2017, 42, 12364-12374.	7.1	40
43	Isothermal Water Splitting. Science, 2013, 341, 470-471.	12.6	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.	6.1	37
45	The importance of electron correlation for the ground state structure of porphycene and tetraoxaporphyrin-dication. Chemical Physics, 1998, 227, 331-348.	1.9	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.	7.1	33
47	Development of a system model for a hydrogen production process on a solar tower. Solar Energy, 2012, 86, 99-111.	6.1	32
48	Sulphur based thermochemical cycles: Development and assessment of key components of the process. International Journal of Hydrogen Energy, 2013, 38, 6197-6204.	7.1	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.	8.8	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.	6.1	31
51	Demonstration of thermochemical oxygen pumping for atmosphere control in reduction reactions. Solar Energy, 2018, 170, 273-279.	6.1	30
52	Thermochemical oxygen pumping for improved hydrogen production in solar redox cycles. International Journal of Hydrogen Energy, 2019, 44, 9802-9810.	7.1	30
53	Hydrogen production by coupling pressurized high temperature electrolyser with solar tower technology. International Journal of Hydrogen Energy, 2017, 42, 13498-13509.	7.1	28
54	Redox Behavior of Solid Solutions in the SrFe_{1â€x}Cu_xO_{3â€Î´} System for Application in Thermochemical Oxygen Storage and Air Separation. Energy Technology, 2019, 7, 131-139.	3.8	28

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55	Aluminum Remelting using Directly Solar-Heated Rotary Kilns. Journal of Solar Energy Engineering, Transactions of the ASME, 2001, 123, 117-124.	1.8	27
56	Solar Thermochemical Generation of Hydrogen: Development of a Receiver Reactor for the Decomposition of Sulfuric Acid. Journal of Solar Energy Engineering, Transactions of the ASME, 2009, 131, .	1.8	25
57	Solar power tower as heat and electricity source for a solid oxide electrolyzer: a case study. International Journal of Energy Research, 2015, 39, 1120-1130.	4.5	24
58	On the assessment of renewable industrial processes: Case study for solar co-production of methanol and power. Applied Energy, 2016, 183, 121-132.	10.1	24
59	Experimental study on sulfur trioxide decomposition in a volumetric solar receiver-reactor. International Journal of Energy Research, 2009, 33, 799-812.	4.5	23
60	Design of a pilot scale directly irradiated, high temperature, and low pressure moving particle cavity chamber for metal oxide reduction. Solar Energy, 2017, 157, 365-376.	6.1	23
61	Methanol production using hydrogen from concentrated solar energy. International Journal of Hydrogen Energy, 2020, 45, 26117-26125.	7.1	22
62	Hybrid Sensible/Thermochemical Solar Energy Storage Concepts Based on Porous Ceramic Structures and Redox Pair Oxides Chemistry. Energy Procedia, 2015, 69, 706-715.	1.8	18
63	Simulation model for the transient process behaviour of solar aluminium recycling in a rotary kiln. Applied Thermal Engineering, 2015, 78, 387-396.	6.0	17
64	Efficiency potential of indirectly heated solar reforming with open volumetric solar receiver. Applied Thermal Engineering, 2015, 87, 297-304.	6.0	17
65	Reticulated Porous Perovskite Structures for Thermochemical Solar Energy Storage. Advanced Energy Materials, 2022, 12, .	19.5	17
66	Thermochemical storage for CSP via redox structured reactors/heat exchangers: The RESTRUCTURE project. AIP Conference Proceedings, 2017, , .	0.4	16
67	Redox thermochemistry of Ca-Mn-based perovskites for oxygen atmosphere control in solar-thermochemical processes. Solar Energy, 2020, 198, 612-622.	6.1	16
68	Efficiency assessment of a two-step thermochemical water-splitting process based on a dynamic process model. International Journal of Hydrogen Energy, 2015, 40, 12108-12119.	7.1	15
69	Process modelling and heat management of the solar hybrid sulfur cycle. International Journal of Hydrogen Energy, 2015, 40, 4461-4473.	7.1	14
70	Design and construction of a cascading pressure reactor prototype for solar-thermochemical hydrogen production. AIP Conference Proceedings, 2016, , .	0.4	14
71	Moving Brick Receiverâ€"Reactor: A Solar Thermochemical Reactor and Process Design With a Solidâ€"Solid Heat Exchanger and On-Demand Production of Hydrogen and/or Carbon Monoxide. Journal of Solar Energy Engineering, Transactions of the ASME, 2019, 141, .	1.8	13
72	Modeling of a solar receiver-reactor for sulfur-based thermochemical cycles for hydrogen generation. International Journal of Energy Research, 2011, 35, 449-458.	4.5	12

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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, .	1.8	12
75	Storing solar energy in continuously moving redox particles â€" Experimental analysis of charging and discharging reactors. Applied Energy, 2022, 308, 118271.	10.1	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.	6.0	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.	6.0	11
79	Experimental proof of concept of a pilot-scale thermochemical storage unit. AIP Conference Proceedings, 2017, , .	0.4	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.	2.2	10
83	Fabrication and testing of CONTISOL: A new receiver-reactor for day and night solar thermochemistry. Applied Thermal Engineering, 2017, 127, 46-57.	6.0	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.	7.1	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.	4.5	9
86	Material Analysis of Coated Siliconized Silicon Carbide (SiSiC) Honeycomb Structures for Thermochemical Hydrogen Production. Materials, 2013, 6, 421-436.	2.9	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.	7.1	9
88	Citric acid auto-combustion synthesis of Ti-containing perovskites via aqueous precursors. Solid State Ionics, 2018, 315, 92-97.	2.7	9
89	HYDROSOL-PLANT: Structured redox reactors for H2 production from solar thermochemical H2O splitting. AIP Conference Proceedings, 2018, , .	0.4	8
90	Solar rotary kiln for continuous treatment of particle material: Chemical experiments from micro to milli meter particle size. AIP Conference Proceedings, 2020, , .	0.4	7

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91	Study of a new receiver-reactor cavity system with multiple mobile redox units for solar thermochemical water splitting. Solar Energy, 2022, 235, 118-128.	6.1	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. International Journal of Nuclear Hydrogen Production and Applications, 2011, 2, 178.	0.2	6
94	Modeling of a Solar Receiver for Superheating Sulfuric Acid. Journal of Solar Energy Engineering, Transactions of the ASME, 2016, 138, .	1.8	6
95	Efficiency assessment of solar redox reforming in comparison to conventional reforming. International Journal of Hydrogen Energy, 2020, 45, 4137-4151.	7.1	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. AIP Conference Proceedings, 2016, , .	0.4	5
100	Experimental and numerical analysis of a solar rotary kiln for continuous treatment of particle material. AIP Conference Proceedings, 2018, , .	0.4	5
101	Oxygen Crossover in Solidâ€"Solid Heat Exchangers for Solar Water and Carbon Dioxide Splitting: A Thermodynamic Analysis. Journal of Energy Resources Technology, Transactions of the ASME, 2021, 143, .	2.3	5
102	A multicriteria approach for evaluating high temperature hydrogen production processes. International Journal of Multicriteria Decision Making, 2011, 1, 177.	0.2	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. Solar Energy, 2022, 234, 21-38.	6.1	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. AIP Conference Proceedings, 2018, , .	0.4	3
105	Solar energy conversion and storage through sulphur-based thermochemical cycles implemented on centrifugal particle receivers. AIP Conference Proceedings, 2020, , .	0.4	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. Open Ceramics, 2022, 10, 100269.	2.0	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

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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, , .	0.4	2
111	Performance Analysis and Optimization of Solar Thermochemical Waterâ€Splitting Cycle with Single and Multiple Receivers. Energy Technology, 0, , 2100220.	3.8	2
112	Investigation of Process Efficiency of an Indirectly Heated Solar Reformer. Computer Aided Chemical Engineering, 2014, 34, 459-464.	0.5	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.	4.5	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.	7.1	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, , .	0.4	1
122	Solar thermal methane reforming. Advances in Chemical Engineering, 2021, 58, 91-130.	0.9	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, , .	0.4	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

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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, , .	0.4	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