Martin Roeb

List of Publications by Year
in descending order

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	Storing solar energy in continuously moving redox particles â€“ Experimental analysis of charging and discharging reactors. Applied Energy, 2022, 308, 118271.	5.1	12
2	Reticulated Porous Perovskite Structures for Thermochemical Solar Energy Storage. Advanced Energy Materials, 2022, 12, .	10.2	17
3	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.	2.9	4
4	Porous Materials for Solar Energy Harvesting, Transformation, and Storage. , 2022, , 245-283.		1
5	Study of a new receiver-reactor cavity system with multiple mobile redox units for solar thermochemical water splitting. Solar Energy, 2022, 235, 118-128.	2.9	7
6	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
7	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.	1.0	3
8	Porous Materials for Solar Energy Harvesting, Transformation, and Storage. , 2021, , 1-39.		0
9	Two-step thermochemical electrolysis: An approach for green hydrogen production. International Journal of Hydrogen Energy, 2021, 46, 24909-24918.	3.8	41
10	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, .	1.4	5
11	Solar thermal methane reforming. Advances in Chemical Engineering, 2021, 58, 91-130.	0.5	1
12	Redox thermochemistry of Ca-Mn-based perovskites for oxygen atmosphere control in solar-thermochemical processes. Solar Energy, 2020, 198, 612-622.	2.9	16
13	Efficiency assessment of solar redox reforming in comparison to conventional reforming. International Journal of Hydrogen Energy, 2020, 45, 4137-4151.	3.8	6
14	Methanol production using hydrogen from concentrated solar energy. International Journal of Hydrogen Energy, 2020, 45, 26117-26125.	3.8	22
15	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
16	Ammonia and nitrogen-based fertilizer production by solar-thermochemical processes. AIP Conference Proceedings, 2020, , .	0.3	1
17	Solar energy conversion and storage through sulphur-based thermochemical cycles implemented on centrifugal particle receivers. AIP Conference Proceedings, 2020, , .	0.3	3
18	Modeling, simulation and economic analysis of CSP-driven solar fuel plant for diesel and gasoline production. AIP Conference Proceedings, 2019, , .	0.3	0

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19	Solar fuels production: Two-step thermochemical cycles with cerium-based oxides. Progress in Energy and Combustion Science, 2019, 75, 100785.	15.8	122
20	Materials design of perovskite solid solutions for thermochemical applications. Energy and Environmental Science, 2019, 12, 1369-1384.	15.6	122
21	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.	1.8	28
22	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
23	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, .	1.1	13
24	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
25	Thermochemical oxygen pumping for improved hydrogen production in solar redox cycles. International Journal of Hydrogen Energy, 2019, 44, 9802-9810.	3.8	30
26	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
27	Citric acid auto-combustion synthesis of Ti-containing perovskites via aqueous precursors. Solid State Ionics, 2018, 315, 92-97.	1.3	9
28	Experimental and numerical analysis of a solar rotary kiln for continuous treatment of particle material. AIP Conference Proceedings, 2018, , .	0.3	5
29	HYDROSOL-PLANT: Structured redox reactors for H2 production from solar thermochemical H2O splitting. AIP Conference Proceedings, 2018, , .	0.3	8
30	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, , .	0.3	3
31	Demonstration of thermochemical oxygen pumping for atmosphere control in reduction reactions. Solar Energy, 2018, 170, 273-279.	2.9	30
32	4.18 Solar Fuels. , 2018, , 733-761.		1
33	Solar thermochemical heat storage via the Co3O4/CoO looping cycle: Storage reactor modelling and experimental validation. Solar Energy, 2017, 144, 453-465.	2.9	58
34	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.	2.9	52
35	Design, development, construction and operation of a novel metal hydride compressor. International Journal of Hydrogen Energy, 2017, 42, 12364-12374.	3.8	40
36	Solar hydrogen production via sulphur based thermochemical water-splitting. Solar Energy, 2017, 156, 30-47.	2.9	72

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37	Redox chemistry of CaMnO₃ and Ca_{0.8}Sr_{0.2}MnO₃ oxygen storage perovskites. Journal of Materials Chemistry A, 2017, 5, 7912-7919.	5.2	79
38	Experimental evaluation of a pilot-scale thermochemical storage system for a concentrated solar power plant. Applied Energy, 2017, 189, 66-75.	5.1	92
39	Hydrogen production by coupling pressurized high temperature electrolyser with solar tower technology. International Journal of Hydrogen Energy, 2017, 42, 13498-13509.	3.8	28
40	Applications and limitations of two step metal oxide thermochemical redox cycles; a review. Journal of Materials Chemistry A, 2017, 5, 18951-18966.	5.2	133
41	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.	2.9	23
42	Thermochemical storage for CSP via redox structured reactors/heat exchangers: The RESTRUCTURE project. AIP Conference Proceedings, 2017, , .	0.3	16
43	Experimental proof of concept of a pilot-scale thermochemical storage unit. AIP Conference Proceedings, 2017, , .	0.3	11
44	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
45	Redox thermodynamics and phase composition in the system SrFeO3Î´ â€” SrMnO3Î´. Solid State Ionics, 2017, 308, 149-155.	1.3	59
46	Thermodynamic Model of a Solar Receiver for Superheating of Sulfur Trioxide and Steam at Pilot Plant Scale. , 2016, , .		0
47	Design and construction of a cascading pressure reactor prototype for solar-thermochemical hydrogen production. AIP Conference Proceedings, 2016, , .	0.3	14
48	Entropy Analysis of Solar Two-Step Thermochemical Cycles for Water and Carbon Dioxide Splitting. Entropy, 2016, 18, 24.	1.1	10
49	SolarSyngas: Results from a virtual institute developing materials and key components for solar thermochemical fuel production. AIP Conference Proceedings, 2016, , .	0.3	2
50	Modeling of a Solar Receiver for Superheating Sulfuric Acid. Journal of Solar Energy Engineering, Transactions of the ASME, 2016, 138, .	1.1	6
51	A solar receiver-storage modular cascade based on porous ceramic structures for hybrid sensible/thermochemical solar energy storage. AIP Conference Proceedings, 2016, , .	0.3	5
52	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
53	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
54	On the assessment of renewable industrial processes: Case study for solar co-production of methanol and power. Applied Energy, 2016, 183, 121-132.	5.1	24

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55	Statistical thermodynamics of non-stoichiometric ceria and ceria zirconia solid solutions. Physical Chemistry Chemical Physics, 2016, 18, 23147-23154.	1.3	50
56	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
57	Perovskite oxides for application in thermochemical air separation and oxygen storage. Journal of Materials Chemistry A, 2016, 4, 13652-13659.	5.2	110
58	Solar thermochemical hydrogen production using ceria zirconia solid solutions: Efficiency analysis. International Journal of Hydrogen Energy, 2016, 41, 19320-19328.	3.8	47
59	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.	2.9	79
60	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
61	Oxidation and Reduction Reaction Kinetics of Mixed Cerium Zirconium Oxides. Journal of Physical Chemistry C, 2016, 120, 2027-2035.	1.5	47
62	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
63	Solar Aluminum Recycling in a Directly Heated Rotary Kiln. , 2016, , 235-240.		2
64	Solar-Aided Syngas Production via Two-Step, Redox-Pair-Based Thermochemical Cycles. , 2015, , 475-513.		1
65	Hybrid Sensible/Thermochemical Storage of Solar Energy in Cascades of Redox-Oxide-Pair-Based Porous Ceramics. , 2015, , .		2
66	Modeling of a Solar Receiver for Superheating Sulfuric Acid. , 2015, , .		0
67	Counter flow sweep gas demand for the ceria redox cycle. Solar Energy, 2015, 122, 1011-1022.	2.9	44
68	Ceria Doped with Zirconium and Lanthanide Oxides to Enhance Solar Thermochemical Production of Fuels. Journal of Physical Chemistry C, 2015, 119, 6929-6938.	1.5	71
69	Simulation model for the transient process behaviour of solar aluminium recycling in a rotary kiln. Applied Thermal Engineering, 2015, 78, 387-396.	3.0	17
70	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
71	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.	2.2	24
72	Design of a Thermochemical Storage System for Air-operated Solar Tower Power Plants. Energy Procedia, 2015, 69, 1039-1048.	1.8	10

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73	Process modelling and heat management of the solar hybrid sulfur cycle. International Journal of Hydrogen Energy, 2015, 40, 4461-4473.	3.8	14
74	Efficiency potential of indirectly heated solar reforming with open volumetric solar receiver. Applied Thermal Engineering, 2015, 87, 297-304.	3.0	17
75	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.	2.9	94
76	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.	2.9	88
77	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.	3.8	15
78	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.	8.2	316
79	Cobalt Oxide-Based Structured Thermochemical Reactors/Heat Exchangers for Solar Thermal Energy Storage in Concentrated Solar Power Plants. , 2014, , .		12
80	Solar thermal reforming of methane feedstocks for hydrogen and syngas productionâ€"A review. Renewable and Sustainable Energy Reviews, 2014, 29, 656-682.	8.2	306
81	Heat recovery concept for thermochemical processes using a solid heat transfer medium. Applied Thermal Engineering, 2014, 73, 1006-1013.	3.0	42
82	Thermochemical Solar Energy Storage Via Redox Oxides: Materials and Reactor/Heat Exchanger Concepts. Energy Procedia, 2014, 49, 1034-1043.	1.8	107
83	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.	2.9	147
84	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
85	Process Simulation for Solar Steam and Dry Reforming. Energy Procedia, 2014, 49, 850-859.	1.8	11
86	Solid Phase Heat Recovery and Multi Chamber Reduction for Redox Cycles. , 2014, , .		10
87	Investigation of Process Efficiency of an Indirectly Heated Solar Reformer. Computer Aided Chemical Engineering, 2014, 34, 459-464.	0.3	2
88	Isothermal Water Splitting. Science, 2013, 341, 470-471.	6.0	39
89	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
90	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

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91	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
92	Solar Thermal Water Splitting. , 2013, , 63-86.		5
93	Material Analysis of Coated Siliconized Silicon Carbide (SiSiC) Honeycomb Structures for Thermochemical Hydrogen Production. Materials, 2013, 6, 421-436.	1.3	9
94	Sulfur Based Thermochemical Energy Storage for Concentrated Solar Power. , 2013, , .		5
95	Thermogravimetric Analysis of Zirconia-Doped Ceria for Thermochemical Production of Solar Fuel. American Journal of Analytical Chemistry, 2013, 04, 37-45.	0.3	63
96	Materials-Related Aspects of Thermochemical Water and Carbon Dioxide Splitting: A Review. Materials, 2012, 5, 2015-2054.	1.3	129
97	Multi-Scale Modelling of a Solar Reactor for the High-Temperature Step of a Sulphur-Iodine-Based Water Splitting Cycle. , 2012, , .		2
98	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
99	Solar-heated rotary kiln for thermochemical energy storage. Solar Energy, 2012, 86, 3040-3048.	2.9	165
100	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
101	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
102	Development of a system model for a hydrogen production process on a solar tower. Solar Energy, 2012, 86, 99-111.	2.9	32
103	Technologies and trends in solar power and fuels. Energy and Environmental Science, 2011, 4, 2503.	15.6	78
104	Examples of Solar Thermal Fuel Production. , 2011, , .		0
105	A multicriteria approach for evaluating high temperature hydrogen production processes. International Journal of Multicriteria Decision Making, 2011, 1, 177.	0.1	4
106	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
107	Modeling of a solar receiver-reactor for sulfur-based thermochemical cycles for hydrogen generation. International Journal of Energy Research, 2011, 35, 449-458.	2.2	12
108	Hydrogen production via sulfur-based thermochemical cycles: Part 2: Performance evaluation of Fe_2O_3-based catalysts for the sulfuric acid decomposition step. International Journal of Hydrogen Energy, 2011, 36, 6496-6509.	3.8	71

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109	Test operation of a 100kW pilot plant for solar hydrogen production from water on a solar tower. Solar Energy, 2011, 85, 634-644.	2.9	138
110	Investigations of the Regeneration Step of a Thermochemical Cycle Using Mixed Iron Oxides Coated on SiSiC Substrates. , 2011, , .		1
111	Concentrating on Solar Electricity and Fuels. Science, 2010, 329, 773-774.	6.0	48
112	Numerical Optimization of a Volumetric Solar Receiver-Reactor for Thermochemical Hydrogen Generation via Decomposition of Sulfur Trioxide. , 2010, , .		1
113	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, .	1.1	25
114	Simulation of a Volumetric Solar Receiver-Reactor for Hydrogen Producing Thermochemical Cycles. , 2009, , .		2
115	Simulation of a Solar Receiver-Reactor for Hydrogen Production. , 2009, , .		6
116	Thermodynamic analysis of two-step solar water splitting with mixed iron oxides. International Journal of Energy Research, 2009, 33, 893-902.	2.2	44
117	Experimental study on sulfur trioxide decomposition in a volumetric solar receiver-reactor. International Journal of Energy Research, 2009, 33, 799-812.	2.2	23
118	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
119	Operational strategy of a two-step thermochemical process for solar hydrogen production. International Journal of Hydrogen Energy, 2009, 34, 4537-4545.	3.8	94
120	Prospects of solar thermal hydrogen production processes. International Journal of Hydrogen Energy, 2009, 34, 4256-4267.	3.8	186
121	Economic comparison of solar hydrogen generation by means of thermochemical cycles and electrolysis. International Journal of Hydrogen Energy, 2008, 33, 4511-4519.	3.8	108
122	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.	3.8	127
123	Solar Thermochemical Generation of Hydrogen: Development of a Receiver Reactor for the Decomposition of Sulfuric Acid. , 2007, , .		1
124	Double-Focus Configuration at DLR Solar Furnace for Operating a Continuous Reactor. , 2006, , 29.		0
125	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.	1.1	140
126	Efficient Solar Thermal Processes From Carbon Based to Carbon Free Hydrogen Production. , 2006, , .		0

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127	Solar Hydrogen Production by a Two-Step Cycle Based on Mixed Iron Oxides. , 2005, , 671.		5
128	Solar water splitting for hydrogen production with monolithic reactors. Solar Energy, 2005, 79, 409-421.	2.9	242
129	Aluminum Remelting using Directly Solar-Heated Rotary Kilns. Journal of Solar Energy Engineering, Transactions of the ASME, 2001, 123, 117-124.	1.1	27
130	The importance of electron correlation for the ground state structure of porphycene and tetraoxaporphyrin-dication. Chemical Physics, 1998, 227, 331-348.	0.9	36
131	Performance Analysis and Optimization of Solar Thermochemical Waterâ€Splitting Cycle with Single and Multiple Receivers. Energy Technology, 0, , 2100220.	1.8	2