Sossina M Haile

List of Publications by Year
in descending order

115 papers	14,981 citations	61945 43 h-index	26591 107 g-index
115 all docs	115 docs citations	115 times ranked	9881 citing authors

#	Article	IF	Citations
1	A high-performance cathode for the next generation of solid-oxide fuel cells. Nature, 2004, 431, 170-173.	13.7	2,737
2	High-Flux Solar-Driven Thermochemical Dissociation of CO ₂ and H ₂ O Using Nonstoichiometric Ceria. Science, 2010, 330, 1797-1801.	6.0	1,292
3	Fuel cell materials and componentsâ˜†â˜†The Golden Jubilee Issueâ€"Selected topics in Materials Science and Engineering: Past, Present and Future, edited by S. Suresh.. Acta Materialia, 2003, 51, 5981-6000.	3.8	1,068
4	Solid acids as fuel cell electrolytes. Nature, 2001, 410, 910-913.	13.7	833
5	Chemical stability and proton conductivity of doped BaCeO3â€"BaZrO3 solid solutions. Solid State Ionics, 1999, 125, 355-367.	1.3	602
6	Exceptional power density and stability at intermediate temperatures in protonic ceramic fuel cells. Nature Energy, 2018, 3, 202-210.	19.8	587
7	Enhanced Sintering of Yttrium-Doped Barium Zirconate by Addition of ZnO. Journal of the American Ceramic Society, 2005, 88, 2362-2368.	1.9	524
8	High-Performance Solid Acid Fuel Cells Through Humidity Stabilization. Science, 2004, 303, 68-70.	6.0	440
9	High Total Proton Conductivity in Large-Grained Yttrium-Doped Barium Zirconate. Chemistry of Materials, 2009, 21, 2755-2762.	3.2	427
10	A thermochemical study of ceria: exploiting an old material for new modes of energy conversion and CO ₂ mitigation. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2010, 368, 3269-3294.	1.6	371
11	Processing of yttrium-doped barium zirconate for high proton conductivity. Journal of Materials Research, 2007, 22, 1322-1330.	1.2	363
12	Impedance Spectroscopy as a Tool for Chemical and Electrochemical Analysis of Mixed Conductors: A Case Study of Ceria. Journal of the American Ceramic Society, 2005, 88, 2979-2997.	1.9	318
13	A review of defect structure and chemistry in ceria and its solid solutions. Chemical Society Reviews, 2020, 49, 554-592.	18.7	298
14	Proton trapping in yttrium-doped barium zirconate. Nature Materials, 2013, 12, 647-651.	13.3	297
15	High electrochemical activity of the oxide phase in model ceriaâ€"Pt and ceriaâ€"Ni composite anodes. Nature Materials, 2012, 11, 155-161.	13.3	288
16	Solid acid proton conductors: from laboratory curiosities to fuel cell electrolytes. Faraday Discussions, 2007, 134, 17-39.	1.6	272
17	Protonic ceramic electrochemical cells for hydrogen production and electricity generation: exceptional reversibility, stability, and demonstrated faradaic efficiency. Energy and Environmental Science, 2019, 12, 206-215.	15.6	257
18	Ceria as a Thermochemical Reaction Medium for Selectively Generating Syngas or Methane from H₂O and CO₂. ChemSusChem, 2009, 2, 735-739.	3.6	249

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19	The role of microstructure and processing on the proton conducting properties of gadolinium-doped barium cerate. Journal of Materials Research, 1998, 13, 1576-1595.	1.2	219
20	Cation non-stoichiometry in yttrium-doped barium zirconate: phase behavior, microstructure, and proton conductivity. Journal of Materials Chemistry, 2010, 20, 8158.	6.7	197
21	Ceriaâ€“Zirconia Solid Solutions (Ce_{1â€“<i>x</i>}Zr_{<i>x</i>}O_{2â^’Î´},) Tj ETQq1 1 0.784314 rgBT /(Materials, 2014, 26, 6073-6082.	3.2	170
22	Defect Chemistry of Yttrium-Doped Barium Zirconate: A Thermodynamic Analysis of Water Uptake. Chemistry of Materials, 2008, 20, 6352-6357.	3.2	169
23	Highly Enhanced Concentration and Stability of Reactive Ce³⁺ on Doped CeO₂ Surface Revealed In Operando. Chemistry of Materials, 2012, 24, 1876-1882.	3.2	169
24	Hydrothermal synthesis of KNbO₃ and NaNbO₃ powders. Journal of Materials Research, 2003, 18, 338-345.	1.2	162
25	Thermodynamic and kinetic assessments of strontium-doped lanthanum manganite perovskites for two-step thermochemical water splitting. Journal of Materials Chemistry A, 2014, 2, 13612-13623.	5.2	157
26	High-Temperature Behavior of CsH2PO4under Both Ambient and High Pressure Conditions. Chemistry of Materials, 2003, 15, 727-736.	3.2	154
27	Suppression of atom motion and metal deposition in mixed ionic electronic conductors. Nature Communications, 2018, 9, 2910.	5.8	148
28	High-temperature isothermal chemical cycling for solar-driven fuel production. Physical Chemistry Chemical Physics, 2013, 15, 17084.	1.3	117
29	Electrochemical studies of capacitance in cerium oxide thin films and its relationship to anionic and electronic defect densities. Physical Chemistry Chemical Physics, 2009, 11, 8144.	1.3	87
30	High electrode activity of nanostructured, columnar ceria films for solid oxide fuel cells. Energy and Environmental Science, 2012, 5, 8682.	15.6	83
31	An electrical conductivity relaxation study of oxygen transport in samarium doped ceria. Journal of Materials Chemistry A, 2014, 2, 2405-2417.	5.2	82
32	Dehydration behavior of the superprotonic conductor CsH2PO4 at moderate temperatures: 230 to 260 Â°C. Journal of Materials Chemistry, 2007, 17, 3182.	6.7	81
33	Hydrothermal synthesis of perovskite and pyrochlore powders of potassium tantalate. Journal of Materials Research, 2002, 17, 3168-3176.	1.2	75
34	Variability and origins of grain boundary electric potential detected by electron holography and atom-probe tomography. Nature Materials, 2020, 19, 887-893.	13.3	72
35	Unraveling the defect chemistry and proton uptake of yttrium-doped barium zirconate. Scripta Materialia, 2011, 65, 102-107.	2.6	69
36	Polymer Solid Acid Composite Membranes for Fuel-Cell Applications. Journal of the Electrochemical Society, 2000, 147, 3610.	1.3	61

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37	Dynamic Nuclear Polarization NMR of Low-Î³ Nuclei: Structural Insights into Hydrated Yttrium-Doped BaZrO₃. Journal of Physical Chemistry Letters, 2014, 5, 2431-2436.	2.1	60
38	Instability of Sulfate and Selenate Solid Acids in Fuel Cell Environments. Energy & Fuels, 2003, 17, 210-215.	2.5	57
39	Thermodynamic, thermomechanical, and electrochemical evaluation of CsHSO4. Solid State Ionics, 2005, 176, 127-133.	1.3	54
40	Electrochemical behavior of ceria with selected metal electrodes. Solid State Ionics, 2008, 179, 1036-1041.	1.3	52
41	Alcohol Fuel Cells at Optimal Temperatures. Electrochemical and Solid-State Letters, 2006, 9, A261.	2.2	51
42	Outstanding Properties and Performance of CaTi0.5Mn0.5O3â€“Î´ for Solar-Driven Thermochemical Hydrogen Production. Matter, 2021, 4, 688-708.	5.0	45
43	Electrochemical impedance spectroscopy of mixed conductors under a chemical potential gradient: a case study of Pt|SDC|BSCF. Physical Chemistry Chemical Physics, 2008, 10, 865-883.	1.3	44
44	An Easily Fabricated Low-Cost Potentiostat Coupled with User-Friendly Software for Introducing Students to Electrochemical Reactions and Electroanalytical Techniques. Journal of Chemical Education, 2018, 95, 1658-1661.	1.1	43
45	Favorable Redox Thermodynamics of SrTi_{0.5}Mn_{0.5}O_{3âˆ’Î´} in Solar Thermochemical Water Splitting. Chemistry of Materials, 2020, 32, 9335-9346.	3.2	42
46	The favourable thermodynamic properties of Fe-doped CaMnO₃ for thermochemical heat storage. Journal of Materials Chemistry A, 2020, 8, 8503-8517.	5.2	42
47	Superprotonic phase transition ofCsHSO4: A molecular dynamics simulation study. Physical Review B, 2005, 72, .	1.1	40
48	Roadmap on inorganic perovskites for energy applications. JPhys Energy, 2021, 3, 031502.	2.3	40
49	Inverse opal ceriaâ€“zirconia: architectural engineering for heterogeneous catalysis. Energy and Environmental Science, 2008, 1, 484.	15.6	37
50	Maximizing fuel production rates in isothermal solar thermochemical fuel production. Applied Energy, 2016, 183, 1098-1111.	5.1	35
51	High-temperature phase transitions in K3H(SO4)2. Solid State Ionics, 2001, 145, 179-184.	1.3	34
52	Phase behavior and superprotonic conductivity in the Cs_{1âˆ’x}Rb_xH₂PO₄and Cs_{1âˆ’x}K_xH₂PO₄systems. Journal of Materials Chemistry A, 2014, 2, 204-214.	5.2	34
53	Interplay of material thermodynamics and surface reaction rate on the kinetics of thermochemical hydrogen production. International Journal of Hydrogen Energy, 2017, 42, 16932-16945.	3.8	33
54	From Laboratory Breakthrough to Technological Realization: The Development Path for Solid Acid Fuel Cells. Electrochemical Society Interface, 2009, 18, 53-59.	0.3	33

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55	Platinum-decorated carbon nanotubes for hydrogen oxidation and proton reduction in solid acid electrochemical cells. Chemical Science, 2015, 6, 1570-1577.	3.7	32
56	Solid Acid Electrochemical Cell for the Production of Hydrogen from Ammonia. Joule, 2020, 4, 2338-2347.	11.7	30
57	Extreme high temperature redox kinetics in ceria: exploration of the transition from gas-phase to material-kinetic limitations. Physical Chemistry Chemical Physics, 2016, 18, 21554-21561.	1.3	26
58	Impact of enhanced oxide reducibility on rates of solar-driven thermochemical fuel production. MRS Communications, 2017, 7, 873-878.	0.8	26
59	Preparation of (Pb,Ba)TiO3 powders and highly oriented thin films by a sol-gel process. Journal of Materials Research, 2004, 19, 1492-1498.	1.2	25
60	Unusual decrease in conductivity upon hydration in acceptor doped, microcrystalline ceria. Physical Chemistry Chemical Physics, 2011, 13, 6442.	1.3	25
61	Platinum thin film anodes for solid acid fuel cells. Energy and Environmental Science, 2011, 4, 4230.	15.6	25
62	Oxygen Affinity: The Missing Link Enabling Prediction of Proton Conductivities in Doped Barium Zirconates. Chemistry of Materials, 2020, 32, 7292-7300.	3.2	25
63	Phase transformation and hysteresis behavior in Cs1âˆ’xRbxH2PO4. Solid State Ionics, 2010, 181, 173-179.	1.3	24
64	Polymer sphere lithography for solid oxide fuel cells: a route to functional, well-defined electrode structures. Journal of Materials Chemistry, 2010, 20, 2190.	6.7	24
65	The thermodynamics and kinetics of the dehydration of CsH2PO4 studied in the presence of SiO2. Solid State Ionics, 2012, 213, 63-71.	1.3	24
66	Bulk Properties of the Oxygen Reduction Catalyst SrCo_{0.9}Nb_{0.1}O_{3âˆ’Î´}. Chemistry of Materials, 2016, 28, 2599-2608.	3.2	24
67	Implications of Exceptional Material Kinetics on Thermochemical Fuel Production Rates. Energy Technology, 2016, 4, 764-770.	1.8	23
68	The role of ceramic and glass science research in meeting societal challenges: Report from an <scp>NSF</scp>â€sponsored workshop. Journal of the American Ceramic Society, 2017, 100, 1777-1803.	1.9	23
69	Probing the reaction pathway in (La_{0.8}Sr_{0.2})_{0.95}MnO_{3+Î´} using libraries of thin film microelectrodes. Journal of Materials Chemistry A, 2015, 3, 19330-19345.	5.2	22
70	Neutron Rietveld Analysis of Anion and Cation Disorder in the Fast-Ion Conducting Pyrochlore System Y₂(Zr_xTi_{1âˆ’x})₂O₇. Materials Research Society Symposia Proceedings, 1989, 166, 81.	0.1	21
71	Atomic layer deposition of Pt@CsH2PO4 for the cathodes of solid acid fuel cells. Electrochimica Acta, 2018, 288, 12-19.	2.6	21
72	Geometrically asymmetric electrodes for probing electrochemical reaction kinetics: a case study of hydrogen at the Ptâ€“CsH2PO4 interface. Physical Chemistry Chemical Physics, 2009, 11, 8349.	1.3	20

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73	A Thermally Self-Sustaining Miniature Solid Oxide Fuel Cell. Journal of Fuel Cell Science and Technology, 2009, 6, .	0.8	20
74	Impact of La doping on the thermochemical heat storage properties of CaMnO3-Î´. Journal of Energy Storage, 2021, 40, 102793.	3.9	20
75	Gas-phase vs. material-kinetic limits on the redox response of nonstoichiometric oxides. Physical Chemistry Chemical Physics, 2017, 19, 7420-7430.	1.3	18
76	Electrifying membranes to deliver hydrogen. Science, 2022, 376, 348-349.	6.0	16
77	Entropy Evaluation of the Superprotonic Phase of CsHSO4:â€‰ Pauling's Ice Rules Adjusted for Systems Containing Disordered Hydrogen-Bonded Tetrahedra. Chemistry of Materials, 2007, 19, 270-279.	3.2	15
78	Engineering the Next Generation of Solid State Proton Conductors: Synthesis and Properties of Ba_{3â^'<i>x</i>}K_{<i>x</i>}H_{<i>x</i>}(PO₄)₂. Chemistry of Materials, 2010, 22, 1186-1194.	3.2	12
79	A piezomicrobalance system for highâ€temperature mass relaxation characterization of metal oxides: A case study of Prâ€doped ceria. Journal of the American Ceramic Society, 2017, 100, 1161-1171.	1.9	12
80	Unexpected trends in the enhanced Ce³⁺ surface concentration in ceriaâ€"zirconia catalyst materials. Journal of Materials Chemistry A, 2020, 8, 9850-9858.	5.2	12
81	Fe-doped CaMnO3 for thermochemical heat storage application. AIP Conference Proceedings, 2019, , .	0.3	11
82	LiIn₂SbO₆: A New Rutile-Related Structure Type with Unique Ion Channels. Chemistry of Materials, 2020, 32, 4785-4794.	3.2	10
83	Structure and Properties of Cs₇(H₄PO₄)(H₂PO₄)₈: A New Superprotonic Solid Acid Featuring the Unusual Polycation (H₄PO₄)⁺. Journal of the American Chemical Society, 2020, 142, 19992-20001.	6.6	9
84	Low-Temperature Crystallization of Sol-Gel Processed Pb0.5Ba0.5TiO3: Powders and Oriented Thin Films. Journal of the American Ceramic Society, 2004, 87, 1388-1391.	1.9	8
85	High-temperature phase behavior in the Rb3H(SO4)2â€"RbHSO4 pseudo-binary system and the new compound Rb5H3(SO4)4. Solid State Ionics, 2012, 213, 53-57.	1.3	8
86	Hidden Complexity in the Chemistry of Ammonolysis-Derived â€œÎ³-Mo₂Nâ€: An Overlooked Oxynitride Hydride. Chemistry of Materials, 2021, 33, 6671-6684.	3.2	8
87	Thermodynamic assessment of nonstoichiometric oxides for solar thermochemical fuel production. Solar Energy, 2022, 241, 504-514.	2.9	8
88	Phase Behavior and Superionic Transport Characteristics of (M_{<i>x</i>}Rb_{1â€"<i>x</i>})₃H(SeO₄)₂ (M = K) TjETQq0 0 0 rgBT /Ove	3.2	7
89	Local Multimodal Electroâ€Chemicalâ€Structural Characterization of Solidâ€Electrolyte Grain Boundaries. Advanced Energy Materials, 2021, 11, 2003309.	10.2	7
90	Crystal structure, conductivity, and phase stability of Cs3(H1.5PO4)2 under controlled humidity. Solid State Ionics, 2020, 349, 115291.	1.3	7

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91	Towards Understanding Electrocatalysis in CsH2PO4-Based Fuel Cells: Platinum and Palladium Thin Film Electrodes. ECS Transactions, 2008, 13, 57-62.	0.3	6
92	Revealing Local Dynamics of the Protonic Conductor CsH(PO₃H) by Solid-State NMR Spectroscopy and First-Principles Calculations. Journal of Physical Chemistry C, 2017, 121, 27830-27838.	1.5	6
93	Experimental protocols for the assessment of redox thermodynamics of nonstoichiometric oxides: A case study of YMnO_{3â€<i>Î´</i>}. Journal of the American Ceramic Society, 2022, 105, 4375-4386.	1.9	6
94	Phase Behavior and Superprotonic Conductivity in the System (1â€“<i>x</i>)CsH₂PO₄ â€“ <i>x</i>H₃PO₄: Discovery of Off-Stoichiometric Î±-[Cs_{1â€“<i>x</i>}H<i>_x</i>]H₂PO₄. Chemistry of Materials, 2022, 34, 1809-1820.	3.2	5
95	A Convergent Understanding of Charged Defects. Accounts of Materials Research, 0, , .	5.9	5
96	The Kinetics of Ordering in Gadolinium Zirconate: an Unusual Oxygen Ion Conductor. Materials Research Society Symposia Proceedings, 1995, 398, 599.	0.1	4
97	Highâ€temperature structural stability of ceriaâ€based inverse opals. Journal of the American Ceramic Society, 2017, 100, 2659-2668.	1.9	4
98	Out-of-Plane Ionic Conductivity Measurement Configuration for High-Throughput Experiments. ACS Combinatorial Science, 2018, 20, 443-450.	3.8	4
99	Hydrogen oxidation kinetics on platinum-palladium bimetallic thin films for solid acid fuel cells. APL Materials, 2019, 7, 013201.	2.2	4
100	Synthesis, Structure, and Ionic Conductivity of K3NdSi6O15. Materials Research Society Symposia Proceedings, 1990, 210, 645.	0.1	3
101	Insensitivity of the extent of surface reduction of ceria on termination: comparison of (001), (110), and (111) faces. MRS Communications, 2020, 10, 636-641.	0.8	3
102	Combinatorial Approach for Single-Crystalline TaON Growth: Epitaxial Î²-TaON (100)/Î±-Al2O3 (012). ACS Applied Electronic Materials, 2020, 2, 3571-3576.	2.0	3
103	Quantifying leakage fields at ionic grain boundaries using off-axis electron holography. Journal of Applied Physics, 2020, 128, .	1.1	2
104	High-throughput characterization of Lu-doped zirconia. Solid State Ionics, 2021, 368, 115698.	1.3	2
105	Broad Applicability of Electrochemical Impedance Spectroscopy to the Measurement of Oxygen Nonstoichiometry in Mixed Ion and Electron Conductors. ACS Applied Materials & Interfaces, 2022, 14, 19629-19643.	4.0	2
106	Parametric Optimization of a Sol-Gel Process for the Synthesis of Highly-Oriented (Pb, Ba)TiO3 Thin Films. Materials Research Society Symposia Proceedings, 2002, 748, 1.	0.1	1
107	Chemical surface exchange of oxygen on CeO_{2âˆ’Î´} in an O₂/H₂O atmosphere. Physical Chemistry Chemical Physics, 2017, 19, 29287-29293.	1.3	1
108	A humidity-controlled precipitation technique enabling discovery of Rb3(H1.5PO4)2. Journal of Solid State Chemistry, 2021, 296, 121951.	1.4	1

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109	Ionic Conductivity in Laco_{1-X}Mg_XO_{3-Î´}: A Potential Cathode Material for Solid Oxide Fuel Cells. Materials Research Society Symposia Proceedings, 1995, 393, 43.	0.1	0
110	Comparison of Titanium Precursors in the Sol-Gel Synthesis of Pb0.5Ba0.5TiO3 Powders and Thin Films. Materials Research Society Symposia Proceedings, 2003, 784, 11361.	0.1	0
111	In-situ Electron Holography Study of Grain Boundaries in Cerium Oxide. Microscopy and Microanalysis, 2018, 24, 1466-1467.	0.2	0
112	Accelerating oxygen surface exchange. Nature Catalysis, 2020, 3, 863-864.	16.1	0
113	(Invited) Insights into Proton Transport in Superprotonic Solid Acids. ECS Meeting Abstracts, 2019, , .	0.0	0
114	(Invited) Zirconia Doped Ceria As a Mixed Ion and Electron Conductor. ECS Meeting Abstracts, 2019, , .	0.0	0
115	(Invited) Thermochemical Properties of Non-Stoichiometric Oxides for Solar Fuel Generation. ECS Meeting Abstracts, 2019, , .	0.0	0