

Sukhvinder P Badwal

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129
papers

7,100
citations

44
h-index

82
g-index

132
ext. papers

7,737
ext. citations

4.7
avg, IF

6.2
L-index

#	Paper	IF	Citations
129	Review of electrochemical ammonia production technologies and materials. <i>International Journal of Hydrogen Energy</i> , 2013 , 38, 14576-14594	6.7	418
128	Zirconia-based solid electrolytes: microstructure, stability and ionic conductivity. <i>Solid State Ionics</i> , 1992 , 52, 23-32	3.3	395
127	A comprehensive review of direct carbon fuel cell technology. <i>Progress in Energy and Combustion Science</i> , 2012 , 38, 360-399	33.6	369
126	Direct ethanol fuel cells for transport and stationary applications – A comprehensive review. <i>Applied Energy</i> , 2015 , 145, 80-103	10.7	317
125	Interaction between chromia forming alloy interconnects and air electrode of solid oxide fuel cells. <i>Solid State Ionics</i> , 1997 , 99, 297-310	3.3	275
124	Solid oxide electrolyte fuel cell review. <i>Ceramics International</i> , 1996 , 22, 257-265	5.1	247
123	Scandia-zirconia electrolytes for intermediate temperature solid oxide fuel cell operation. <i>Solid State Ionics</i> , 2000 , 136-137, 91-99	3.3	215
122	Stability of solid oxide fuel cell components. <i>Solid State Ionics</i> , 2001 , 143, 39-46	3.3	213
121	Emerging electrochemical energy conversion and storage technologies. <i>Frontiers in Chemistry</i> , 2014 , 2, 79	5	196
120	An electrode kinetics study of H ₂ oxidation on Ni/Y ₂ O ₃ /ZrO ₂ cermet electrode of the solid oxide fuel cell. <i>Solid State Ionics</i> , 1999 , 123, 209-224	3.3	190
119	Review of proton conductors for hydrogen separation. <i>Ionics</i> , 2006 , 12, 103-115	2.7	182
118	Direct coupling of an electrolyser to a solar PV system for generating hydrogen. <i>International Journal of Hydrogen Energy</i> , 2009 , 34, 2531-2542	6.7	168
117	Hydrogen Oxidation at the Nickel and Platinum Electrodes on Yttria-Tetragonal Zirconia Electrolyte. <i>Journal of the Electrochemical Society</i> , 1997 , 144, 3777-3784	3.9	146
116	The electrochemical performance of LSM/zirconia-yttria interface as a function of a-site non-stoichiometry and cathodic current treatment. <i>Solid State Ionics</i> , 1999 , 121, 1-10	3.3	137
115	Grain boundary resistivity in zirconia-based materials: effect of sintering temperatures and impurities. <i>Solid State Ionics</i> , 1995 , 76, 67-80	3.3	135
114	Yttria-zirconia: Effect of microstructure on conductivity. <i>Journal of Materials Science</i> , 1987 , 22, 3231-3239	4.3	131
113	Review of Fuels for Direct Carbon Fuel Cells. <i>Energy & Fuels</i> , 2012 , 26, 1471-1488	4.1	129

112	Oxygen-ion conducting electrolyte materials for solid oxide fuel cells. <i>Ionics</i> , 2000 , 6, 1-21	2.7	118
111	Electrical conductivity of single crystal and polycrystalline yttria-stabilized zirconia. <i>Journal of Materials Science</i> , 1984 , 19, 1767-1776	4.3	117
110	An investigation of conductivity, microstructure and stability of electrolyte compositions in the system 9 mol% (Sc ₂ O ₃ -Y ₂ O ₃)-ZrO ₂ (Al ₂ O ₃). <i>Solid State Ionics</i> , 1998 , 109, 167-186	3.3	115
109	Characterisation, conductivity and mechanical properties of the oxygen-ion conductor La _{0.9} Sr _{0.1} Ga _{0.8} Mg _{0.2} O _{3-x} . <i>Journal of Materials Chemistry</i> , 1997 , 7, 79-83		103
108	Materials for separation membranes in hydrogen and oxygen production and future power generation. <i>Science and Technology of Advanced Materials</i> , 2006 , 7, 792-805	7.1	92
107	A comprehensive review of carbon and hydrocarbon assisted water electrolysis for hydrogen production. <i>Applied Energy</i> , 2018 , 231, 502-533	10.7	91
106	Equivalent Circuit Analysis of the Impedance Response of Semiconductor/Electrolyte/Counterelectrode Cells. <i>Journal of the Electrochemical Society</i> , 1982 , 129, 551-559	3.9	84
105	Evaluation of commercial zirconia powders for solid oxide fuel cells. <i>Solid State Ionics</i> , 1994 , 73, 49-61	3.3	81
104	Impurity and yttrium segregation in yttria-tetragonal zirconia. <i>Solid State Ionics</i> , 1991 , 46, 265-274	3.3	79
103	Fabrication and performance of Ni/3 mol% Y ₂ O ₃ -ZrO ₂ cermet anodes for solid oxide fuel cells. <i>Solid State Ionics</i> , 2000 , 132, 1-14	3.3	78
102	Mixed ionic electronic conducting perovskite anode for direct carbon fuel cells. <i>International Journal of Hydrogen Energy</i> , 2012 , 37, 19092-19102	6.7	76
101	Direct carbon fuel cell operation on brown coal. <i>Applied Energy</i> , 2014 , 120, 56-64	10.7	72
100	Investigation of the stability of ceria-gadolinia electrolytes in solid oxide fuel cell environments. <i>Solid State Ionics</i> , 1999 , 121, 253-262	3.3	70
99	Electrode supported solid oxide fuel cells: Electrolyte films prepared by DC magnetron sputtering. <i>Solid State Ionics</i> , 1997 , 99, 311-319	3.3	62
98	Hydrogen and oxygen generation with polymer electrolyte membrane (PEM)-based electrolytic technology. <i>Ionics</i> , 2006 , 12, 7-14	2.7	62
97	Structural and microstructural stability of ceria-gadolinia electrolyte exposed to reducing environments of high temperature fuel cells. <i>Journal of Materials Chemistry A</i> , 2013 , 1, 10768	13	61
96	The system Y ₂ O ₃ -Sc ₂ O ₃ -ZrO ₂ : Phase stability and ionic conductivity studies. <i>Journal of the European Ceramic Society</i> , 1991 , 7, 197-206	6	57
95	Effect of micro- and nano-structures on the properties of ionic conductors. <i>Solid State Ionics</i> , 1994 , 70-71, 83-95	3.3	56

94	Yttria tetragonal zirconia polycrystalline electrolytes for solid state electrochemical cells. <i>Applied Physics A: Solids and Surfaces</i> , 1990 , 50, 449-462		55
93	Stand-alone PEM water electrolysis system for fail safe operation with a renewable energy source. <i>International Journal of Hydrogen Energy</i> , 2010 , 35, 928-935	6.7	54
92	Electrochemical performance of ceria-gadolinia electrolyte based direct carbon fuel cells. <i>Solid State Ionics</i> , 2011 , 194, 46-52	3.3	51
91	Design, assembly and operation of polymer electrolyte membrane fuel cell stacks to 1 kWe capacity. <i>Journal of Power Sources</i> , 2004 , 125, 155-165	8.9	50
90	Microstructure/conductivity relationship in the scandia-zirconia system. <i>Solid State Ionics</i> , 1992 , 53-56, 769-776	3.3	48
89	The system Y ₂ O ₃ -Sc ₂ O ₃ -ZrO ₂ : Phase characterisation by XRD, TEM and optical microscopy. <i>Journal of the European Ceramic Society</i> , 1991 , 7, 185-195	6	47
88	Effect of alumina additions on the grain boundary and volume resistivity of tetragonal zirconia polycrystals. <i>Journal of Materials Science Letters</i> , 1987 , 6, 1431-1434		47
87	Hydrogen production via solid electrolytic routes. <i>Wiley Interdisciplinary Reviews: Energy and Environment</i> , 2013 , 2, 473-487	4.7	45
86	The effects of sintering atmosphere on impurity phase formation and grain boundary resistivity in Y ₂ O ₃ -fully stabilized ZrO ₂ . <i>Journal of the European Ceramic Society</i> , 1992 , 10, 115-122	6	45
85	Biomass to power conversion in a direct carbon fuel cell. <i>International Journal of Hydrogen Energy</i> , 2014 , 39, 12377-12385	6.7	43
84	Effect of dopant concentration on electrical conductivity in the Sc ₂ O ₃ -ZrO ₂ system. <i>Journal of Materials Science</i> , 1987 , 22, 4125-4132	4.3	42
83	ZrO ₂ -Y ₂ O ₃ : electrical conductivity of some fully and partially stabilized single grains. <i>Journal of Materials Science Letters</i> , 1985 , 4, 487-489		41
82	Grain boundary resistivity in Y-TZP materials as a function of thermal history. <i>Journal of Materials Science</i> , 1989 , 24, 88-96	4.3	35
81	The role of nanosized SnO ₂ in Pt-based electrocatalysts for hydrogen production in methanol assisted water electrolysis. <i>Electrochimica Acta</i> , 2017 , 229, 39-47	6.7	34
80	Electrochemical Techniques in Studies of Solid Ionic Conductors. <i>Key Engineering Materials</i> , 1996 , 125-126, 81-132	0.4	32
79	Chemical diffusion in perovskite cathodes of solid oxide fuel cells: the Sr doped LaMn _{1-x} MxO ₃ (M=Co, Fe) systems. <i>Ceramics International</i> , 2001 , 27, 419-429	5.1	31
78	Catalytic gasification of carbon in a direct carbon fuel cell. <i>Fuel</i> , 2016 , 180, 270-277	7.1	31
77	Electro-catalytic conversion of ethanol in solid electrolyte cells for distributed hydrogen generation. <i>Electrochimica Acta</i> , 2016 , 212, 744-757	6.7	30

76	Performance evaluation of a tubular direct carbon fuel cell operating in a packed bed of carbon. <i>Energy</i> , 2014 , 68, 538-547	7.9	30
75	Performance of zirconia membrane oxygen sensors at low temperatures with nonstoichiometric oxide electrodes. <i>Journal of Applied Electrochemistry</i> , 1986 , 16, 28-40	2.6	30
74	Non-stoichiometric oxide electrodes for solid state electrochemical devices. <i>Journal of Electroanalytical Chemistry and Interfacial Electrochemistry</i> , 1984 , 168, 363-382		28
73	Impurity segregation study at the surface of yttria-zirconia electrolytes by XPS. <i>Solid State Ionics</i> , 1990 , 40-41, 312-315	3.3	27
72	Electrochemical performance of direct carbon fuel cells with titanate anodes. <i>Electrochimica Acta</i> , 2014 , 121, 34-43	6.7	26
71	Direct Carbon Fuel Cell Operation on Brown Coal with a Ni-GDC-YSZ Anode. <i>Electrochimica Acta</i> , 2015 , 178, 721-731	6.7	26
70	Degradation Mechanism in a Direct Carbon Fuel Cell Operated with Demineralised Brown Coal. <i>Electrochimica Acta</i> , 2014 , 143, 278-290	6.7	26
69	Electrical conductivity of Sc ₂ O ₃ -ZrO ₂ compositions by 4-probe d.c. and 2-probe complex impedance techniques. <i>Journal of Materials Science</i> , 1983 , 18, 3117-3127	4.3	26
68	Formation of monoclinic zirconia at the anodic face of tetragonal zirconia polycrystalline solid electrolytes. <i>Applied Physics A: Solids and Surfaces</i> , 1989 , 49, 13-24		25
67	Microstructure of Pt electrodes and its influence on the oxygen transfer kinetics. <i>Solid State Ionics</i> , 1986 , 18-19, 1054-1059	3.3	25
66	Analysis of the conductivity of commercial easy sintering grade 3 mol% YO ₂ ZrO materials. <i>Solid State Ionics</i> , 2005 , 176, 169-178	3.3	24
65	Yttria-doped ceria anode for carbon-fueled solid oxide fuel cell. <i>Journal of Solid State Electrochemistry</i> , 2015 , 19, 325-335	2.6	23
64	Role of iron species as mediator in a PEM based carbon-water co-electrolysis for cost-effective hydrogen production. <i>International Journal of Hydrogen Energy</i> , 2018 , 43, 9144-9152	6.7	22
63	Ceramic composite cathodes for CO ₂ conversion to CO in solid oxide electrolysis cells. <i>Applied Energy</i> , 2018 , 221, 131-138	10.7	22
62	High purity oxygen production with a polymer electrolyte membrane electrolyser. <i>Journal of Membrane Science</i> , 2010 , 346, 227-232	9.6	22
61	Creep Deformation and the Grain-Boundary Resistivity of Tetragonal Zirconia Polycrystalline Materials. <i>Journal of the American Ceramic Society</i> , 1990 , 73, 2505-2507	3.8	22
60	Effect of alumina and monoclinic zirconia on the electrical conductivity of Sc ₂ O ₃ -ZrO ₂ compositions. <i>Journal of Materials Science</i> , 1983 , 18, 3230-3242	4.3	22
59	Composite anodes for improved performance of a direct carbon fuel cell. <i>Journal of Power Sources</i> , 2015 , 284, 122-129	8.9	20

58	Low emission hydrogen generation through carbon assisted electrolysis. <i>International Journal of Hydrogen Energy</i> , 2015 , 40, 70-74	6.7	20
57	Electrode Kinetics at the Pt/Yttria-Stabilized Zirconia Interface by Complex Impedance Dispersion Analysis. <i>Physica Status Solidi A</i> , 1979 , 54, 261-270		20
56	Effect of dopant concentration on the grain boundary and volume resistivity of yttria-zirconia. <i>Journal of Materials Science Letters</i> , 1987 , 6, 1419-1421		19
55	Fuel quality and operational issues for polymer electrolyte membrane (PEM) fuel cells. <i>Ionics</i> , 2005 , 11, 1-10	2.7	18
54	Evaluation of conducting properties of yttria-zirconia wafers. <i>Solid State Ionics</i> , 1990 , 40-41, 869-873	3.3	18
53	Planar solid oxide fuel cells: the Australian experience and outlook. <i>Journal of Power Sources</i> , 2000 , 86, 68-73	8.9	17
52	Urania-yttria solid solution electrodes for high-temperature electrochemical applications. <i>Journal of Materials Science</i> , 1979 , 14, 2353-2365	4.3	17
51	Investigations on fabrication and lifetime performance of self air breathing direct hydrogen micro fuel cells. <i>International Journal of Hydrogen Energy</i> , 2010 , 35, 2506-2516	6.7	16
50	Free energy of formation of PdO by impedance dispersion analysis. <i>Journal of Solid State Chemistry</i> , 1980 , 34, 133-135	3.3	15
49	Electrode Kinetics at the Palladium/Ceramic Oxide Electrolyte Interface. <i>Journal of the Electrochemical Society</i> , 1982 , 129, 1921-1928	3.9	15
48	Microwave sintering of zirconia-yttria electrolytes and measurement of their ionic conductivity. <i>Solid State Ionics</i> , 1996 , 86-88, 1167-1172	3.3	14
47	Role of O^{2-} and anion vacancies in the degradation of Y-TZP in moist environments. <i>Journal of Materials Chemistry</i> , 1994 , 4, 257-263		14
46	Relationship between phase stability and conductivity of yttria tetragonal zirconia. <i>Solid State Ionics</i> , 1990 , 40-41, 882-885	3.3	14
45	Response rate techniques for zirconia-based Nernstian oxygen sensors. <i>Journal of Applied Electrochemistry</i> , 1988 , 18, 608-613	2.6	14
44	The electrode kinetics of the evolution and dissolution of oxygen at the urania-zirconia interfaces. <i>Electrochimica Acta</i> , 1980 , 25, 1115-1125	6.7	14
43	Evaluation of $\text{Sc}_2\text{O}_3\text{-TeO}_2\text{-ZrO}_2$ electrolyte-based tubular fuel cells using activated charcoal and hydrogen fuels. <i>Electrochimica Acta</i> , 2018 , 259, 143-150	6.7	13
42	Chemical interactions between strontium-doped praseodymium manganite and 3 mol% yttria-zirconia. <i>Journal of Materials Chemistry</i> , 1998 , 8, 2787-2794		13
41	A fully automated four-probe d.c. conductivity technique for investigating solid electrolytes. <i>Journal of Applied Electrochemistry</i> , 1991 , 21, 721-728	2.6	13

40	Oxygen measurement with SIRO2sensors. <i>Journal of Physics E: Scientific Instruments</i> , 1987 , 20, 531-540		13
39	Impedance spectroscopy of the Pt/Yttria doped ceria interface. <i>Solid State Ionics</i> , 1983 , 9-10, 973-977	3.3	13
38	Emerging technologies, markets and commercialization of solid-electrolytic hydrogen production. <i>Wiley Interdisciplinary Reviews: Energy and Environment</i> , 2018 , 7, e286	4.7	12
37	Permeation and strength characteristics of macroporous supports for gas separation produced by co-sintering mixtures of γ -alumina and kaolin. <i>Journal of Membrane Science</i> , 2014 , 463, 126-133	9.6	12
36	A manometric method for the determination of chemical diffusion in perovskite-type cathode materials of the solid oxide fuel cell. <i>Ceramics International</i> , 2001 , 27, 431-441	5.1	12
35	Polymer Electrolyte Membrane Technologies Integrated With Renewable Energy for Hydrogen Production 2019 , 235-259		12
34	Enhancing Oxygen Reduction Reactions in Solid Oxide Fuel Cells with Ultrathin Nanofilm Electrode-electrolyte Interfacial Layers. <i>Journal of Physical Chemistry C</i> , 2016 , 120, 15675-15683	3.8	11
33	The effect of alumina addition on the conductivity, microstructure and mechanical strength of zirconia γ -yttria electrolytes. <i>Ionics</i> , 1998 , 4, 25-32	2.7	11
32	Application of work function measurements for surface monitoring of oxide electrode materials (La,Sr)(Co,Mn,Fe)O ₃ . <i>Journal of Physics and Chemistry of Solids</i> , 2001 , 62, 723-729	3.9	11
31	A novel design of bipolar interconnect plate for self-air breathing micro fuel cells and degradation issues. <i>International Journal of Hydrogen Energy</i> , 2012 , 37, 11431-11447	6.7	10
30	A versatile polymer electrolyte membrane fuel cell (3 kWe) facility. <i>Solid State Ionics</i> , 2002 , 152-153, 363-371	3.7	10
29	FUEL CELL HEAT RECOVERY, ELECTRICAL LOAD MANAGEMENT, AND THE ECONOMICS OF SOLAR-HYDROGEN SYSTEMS. <i>International Journal of Power and Energy Systems</i> , 2010 , 30,	1.3	10
28	The application of solid state ionic technology for novel methods of energy generation and supply. <i>Solid State Ionics</i> , 2002 , 152-153, 843-852	3.3	9
27	Nernstian behaviour of zirconia oxygen sensors incorporating composite electrodes. <i>Journal of Applied Electrochemistry</i> , 1988 , 18, 232-239	2.6	9
26	The effect of thermal history on the grain boundary resistivity of Y ₂ Zr ₂ O ₇ /TZP materials. <i>Solid State Ionics</i> , 1988 , 28-30, 1451-1455	3.3	9
25	Conductivities and electronic structures of some phases in the lithium-iron-sulfur system. <i>Journal of Solid State Chemistry</i> , 1982 , 43, 163-174	3.3	9
24	Spontaneous stress-induced oxidation of Ce ions in Gd-doped ceria at room temperature. <i>Ionics</i> , 2014 , 20, 1117-1126	2.7	8
23	Evaluation of solid electrolyte cells with a versatile electrochemical technique. <i>Ionics</i> , 2013 , 19, 265-275	2.7	8

22	Tubular zirconia- γ -yttria electrolyte membrane technology for oxygen separation. <i>Solid State Ionics</i> , 2002 , 152-153, 763-768	3.3	8
21	Oxygen removal and level control with zirconia γ -yttria membrane cells. <i>Ionics</i> , 2003 , 9, 315-320	2.7	8
20	Interfaces in zirconia based electrochemical systems and their influence on electrical properties. <i>Materials Science Monographs</i> , 1995 , 71-111		8
19	Polarization at the $(U_{0.7}Y_{0.3})O_{2+x}/YSZ$ interface by impedance dispersion analysis. <i>Australian Journal of Chemistry</i> , 1978 , 31, 2337	1.2	8
18	Polarization studies on solid electrolyte cells with a full automated galvanostatic current interruption technique. <i>Solid State Ionics</i> , 1990 , 40-41, 878-881	3.3	7
17	The behaviour of lead dioxide electrodes in acidic sulfate electrolytes. <i>Australian Journal of Chemistry</i> , 1981 , 34, 247	1.2	7
16	Comment on "Low-Temperature Ionic Conductivity of 9.4-mol%-Yttria-Stabilized Zirconia Single Crystals" <i>Journal of the American Ceramic Society</i> , 1990 , 73, 3718-3719	3.8	6
15	Faradaic reaction kinetics in solid electrolytes by impedance dispersion analysis. <i>Physica Status Solidi A</i> , 1978 , 49, K181-K184		6
14	Anisotropic Ionic Conductivity Observed in Superplastically Deformed Yttria-Stabilized Zirconia/Alumina Composite. <i>Journal of the American Ceramic Society</i> , 1989 , 72, 1279-1281	3.8	5
13	Interface between cosintered $(U,M)O_{2+x}$ electrodes and yttria-zirconia electrolyte. <i>Solid State Ionics</i> , 1986 , 18-19, 1033-1037	3.3	5
12	Urania γ -candia + Pt composite electrodes for use in solid electrolyte cells. <i>Journal of Electroanalytical Chemistry and Interfacial Electrochemistry</i> , 1986 , 202, 93-99		5
11	Polymer electrolyte membrane fuel cell as a hydrogen flow rate monitoring device. <i>Ionics</i> , 2013 , 19, 523-528	5.7	4
10	In situ high-temperature powder diffraction studies of solid oxide electrolyte direct carbon fuel cell materials in the presence of brown coal. <i>Journal of Materials Science</i> , 2016 , 51, 3928-3940	4.3	1
9	Gasification, DICE, and direct carbon fuel cells for power, fuels, and chemicals production from low rank coals 2017 , 217-237		1
8	An oxygen sensor based on the semiconducting properties of $(U_{0.3}Y_{0.7})O_{2-x}$. <i>Journal of Applied Electrochemistry</i> , 1987 , 17, 495-504	2.6	1
7	Electrochemical behaviour of the surface treated composite-electrolyte/electrode interface. <i>Journal of Applied Electrochemistry</i> , 1984 , 14, 379-387	2.6	1
6	Research and developments in hydrogen technologies. <i>Advances in Applied Ceramics</i> , 2007 , 106, 40-44	2.3	
5	Electrode kinetic behaviour of $(U_{0.4}Pr_{0.6})O_{2+x}/YSZ/(U_{0.4}Pr_{0.6})O_{2+x}$ cells. <i>Journal of Materials Chemistry</i> , 1994 , 4, 1437-1440		

- 4 The Surface Stability of Y-TZP Materials. *Key Engineering Materials*, **1991**, 53-55, 722-725 0.4
- 3 Influence of Y-TZP Additions on the Conductivity of Yttria-Bismuth Oxide. *Key Engineering Materials*, **1991**, 53-55, 241-246 0.4
- 2 The Ionic Conductivity of Yttria-Zirconia Compositions. *Key Engineering Materials*, **1991**, 53-55, 235-240 0.4
- 1 Electrodes for Fuel Cells and Oxygen Pumps: A Test Procedure. *Key Engineering Materials*, **1991**, 53-55, 247-252 0.4