

Boris Chigarev ORCID 0000-0001-9903-2800 https://figshare.com/authors/Boris_Chigarev/6474086

<https://figshare.com/s/d131550592a075a9e376> - private link to all data at figshare

Publications Funded by National Natural Science Foundation of China. 2019-2020. Bibliometric Analysis

Motivation:

Web of Science Core Collection, Publications Funded by National Natural Science Foundation of China, 1975-2020, Web of Science category: "ENERGY FUELS" — **579,396** documents, **1,979,419** — all years, all categories; actual as 10 July 2020.

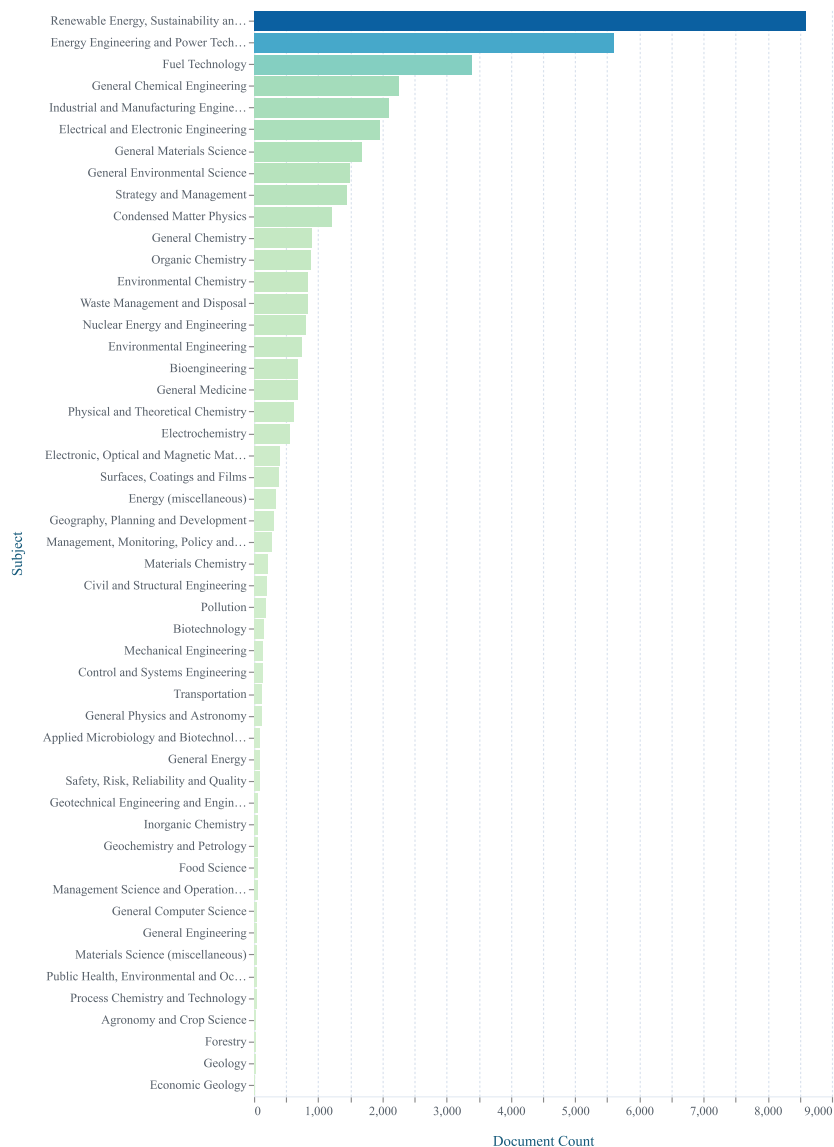
Increased by **26 638** times in **20** years

Publication Years (1979419 — all years)	records
2020	169093
2019	319659
2018	264472
2017	230568
2016	200181
2015	179643
2014	154797
2013	129923
2012	104517
2011	83492
2010	66889
2009	56151
2008	18529
2007	333
2006	271
2005	353
2004	344
2003	47
2002	40
2001	16
2000	12

Data sets: The Lens, 2019-2020, journal articles, Subjects: "Energy Engineering and Power Technology", "Renewable Energy, Sustainability and the Environment", cited by scholarly works, **11,533 docs**. **Web of Science Core Collection**, 2019-2020, **72037 docs**, category: "ENERGY FUELS", 5000 most cited for each year for job. Actual as 10 July 2020.

Remark: the names of files: data base_ + explanation. The file names on the top of figures and tables — are theirs titles and can be downloads from figshare.com: <https://figshare.com/s/d131550592a075a9e376>

The Lens_Top Subject by Document Count.svg

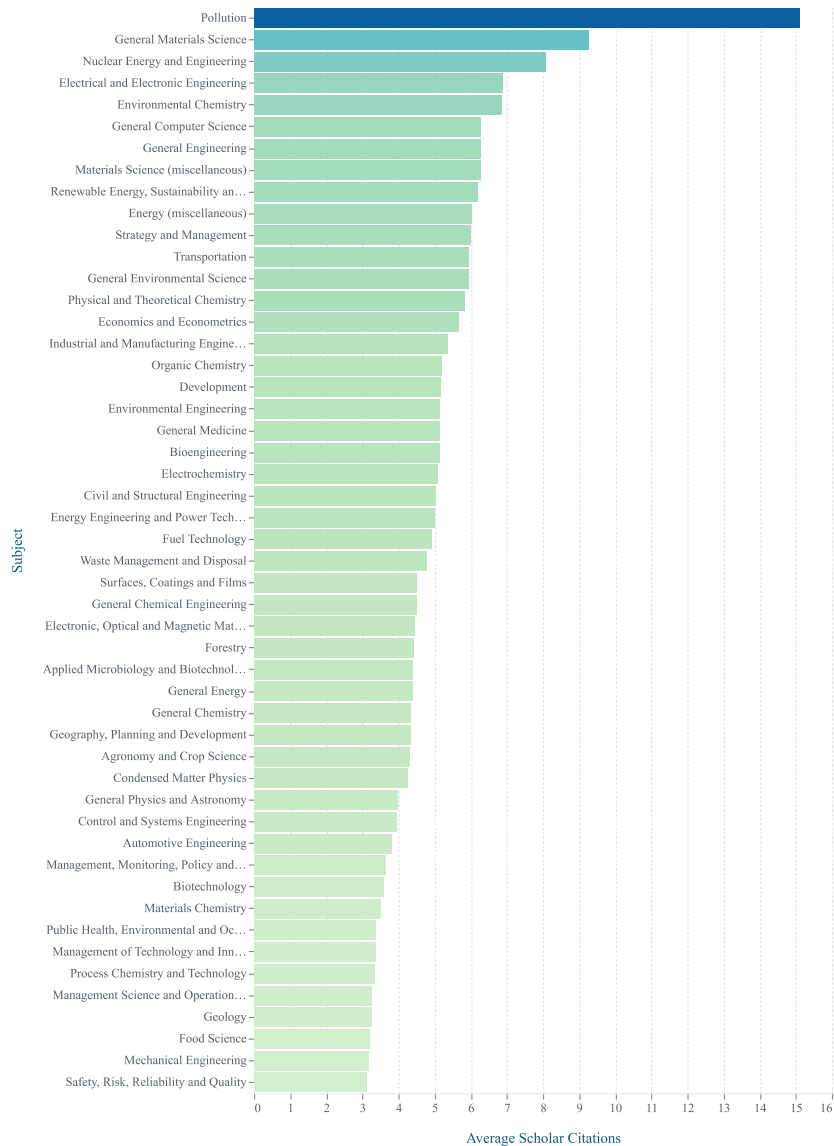


The Lens_Top Subject by Document Count data.csv

Subject	Document Count
Renewable Energy, Sustainability and the Environment	8593
Energy Engineering and Power Technology	5591
Fuel Technology	3382
General Chemical Engineering	2250
Industrial and Manufacturing Engineering	2094
Electrical and Electronic Engineering	1958
General Materials Science	1668
General Environmental Science	1485
Strategy and Management	1443
Condensed Matter Physics	1209
General Chemistry	889
Organic Chemistry	885
Environmental Chemistry	836
Waste Management and Disposal	832
Nuclear Energy and Engineering	795
Environmental Engineering	740

Subject	Document Count
Bioengineering	682
General Medicine	680
Physical and Theoretical Chemistry	610
Electrochemistry	548
Electronic, Optical and Magnetic Materials	392
Surfaces, Coatings and Films	378
Energy (miscellaneous)	337
Geography, Planning and Development	310
Management, Monitoring, Policy and Law	276
Materials Chemistry	216
Civil and Structural Engineering	193
Pollution	177
Biotechnology	151
Mechanical Engineering	128
Control and Systems Engineering	126
Transportation	124
General Physics and Astronomy	112
Applied Microbiology and Biotechnology	90
General Energy	90
Safety, Risk, Reliability and Quality	80
Geotechnical Engineering and Engineering Geology	62
Inorganic Chemistry	61
Geochemistry and Petrology	55
Food Science	53
Management Science and Operations Research	51
General Computer Science	44
General Engineering	44
Materials Science (miscellaneous)	44
Public Health, Environmental and Occupational Health	41
Process Chemistry and Technology	37
Agronomy and Crop Science	27
Forestry	26
Geology	24
Economic Geology	14

The Lens_Top Subject by Average Scholar Citations.svg

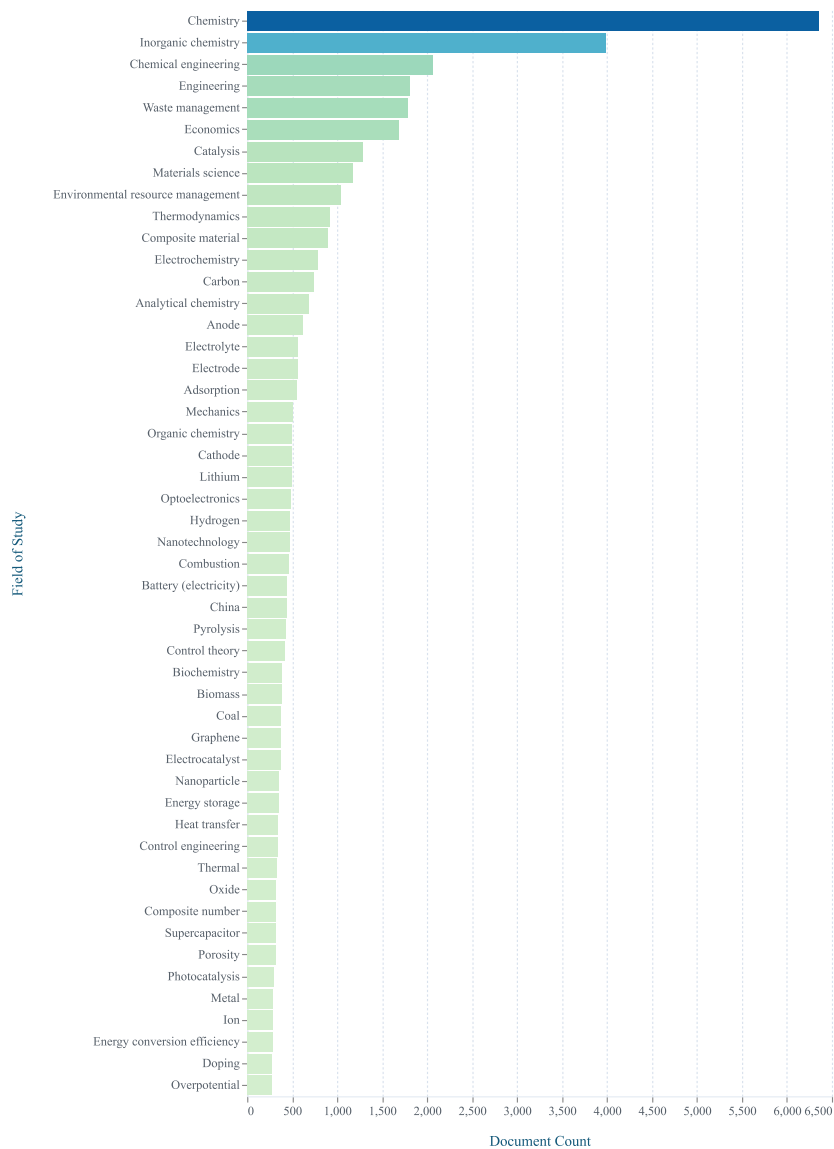


The Lens_Top Subject by Average Scholar Citations data.csv

Subject	Average Scholar Citations
Pollution	15.090395480225988
General Materials Science	9.263189448441247
Nuclear Energy and Engineering	8.079245283018867
Electrical and Electronic Engineering	6.866189989785496
Environmental Chemistry	6.864832535885167
General Computer Science	6.2727272727272725
General Engineering	6.2727272727272725
Materials Science (miscellaneous)	6.2727272727272725
Renewable Energy, Sustainability and the Environment	6.188874665425346
Energy (miscellaneous)	6.032640949554896
Strategy and Management	6.002772002772002
Transportation	5.951612903225806
General Environmental Science	5.927272727272728
Physical and Theoretical Chemistry	5.839344262295082
Economics and Econometrics	5.666666666666667
Industrial and Manufacturing Engineering	5.369627507163324

Subject	Average Scholar Citations
Organic Chemistry	5.179661016949153
Development	5.166666666666667
Environmental Engineering	5.144594594594595
General Medicine	5.139705882352941
Bioengineering	5.127565982404692
Electrochemistry	5.071167883211679
Civil and Structural Engineering	5.025906735751295
Energy Engineering and Power Technology	4.991235914863173
Fuel Technology	4.926966292134831
Waste Management and Disposal	4.775240384615385
Surfaces, Coatings and Films	4.51058201058201
General Chemical Engineering	4.507555555555555
Electronic, Optical and Magnetic Materials	4.433673469387755
Forestry	4.423076923076923
Applied Microbiology and Biotechnology	4.4
General Energy	4.4
General Chemistry	4.3419572553430825
Geography, Planning and Development	4.338709677419355
Agronomy and Crop Science	4.296296296296297
Condensed Matter Physics	4.254755996691481
General Physics and Astronomy	3.9732142857142856
Control and Systems Engineering	3.9444444444444446
Automotive Engineering	3.8
Management, Monitoring, Policy and Law	3.6340579710144927
Biotechnology	3.576158940397351
Materials Chemistry	3.5046296296296298
Public Health, Environmental and Occupational Health	3.3658536585365852
Management of Technology and Innovation	3.357142857142857
Process Chemistry and Technology	3.324324324324324
Management Science and Operations Research	3.2549019607843137
Geology	3.25
Food Science	3.188679245283019
Mechanical Engineering	3.1796875
Safety, Risk, Reliability and Quality	3.125

The Lens_Top Field of Study by Document Count.svg

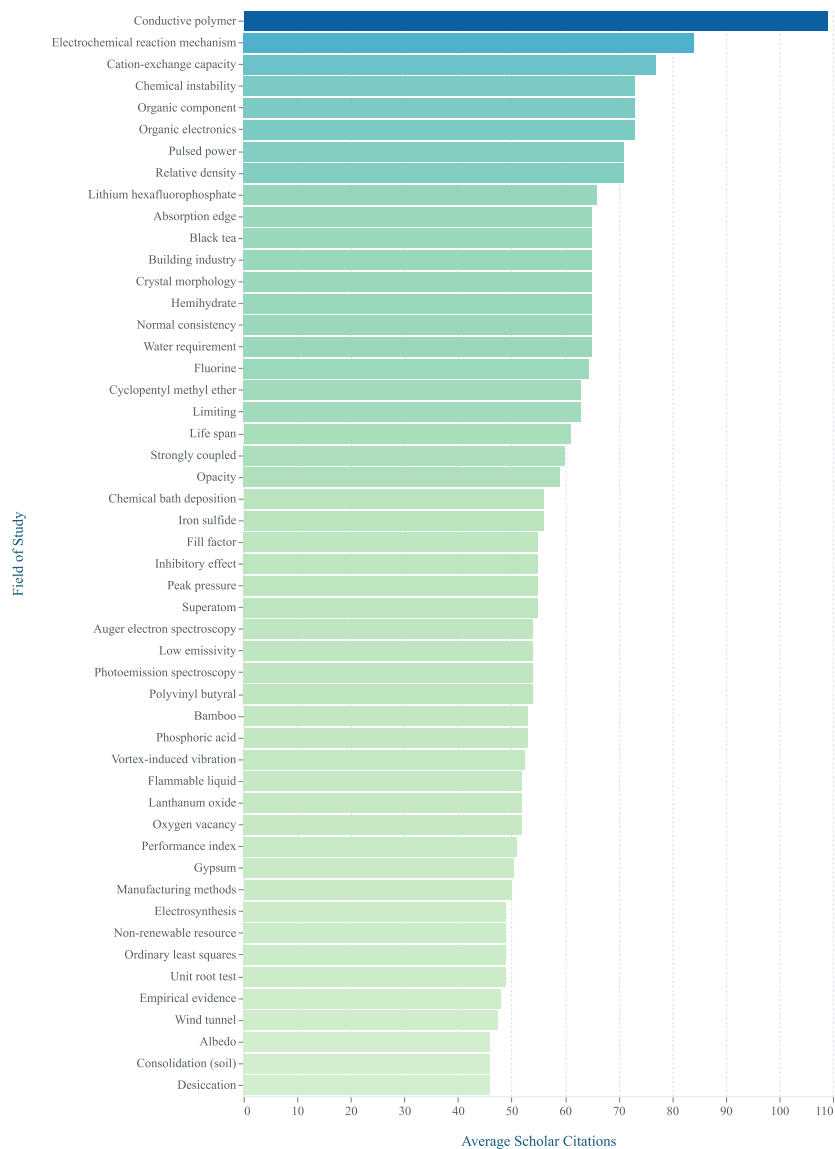


The Lens_Top Field of Study by Document Count data.csv

Field of Study	Document Count
Chemistry	6354
Inorganic chemistry	3989
Chemical engineering	2067
Engineering	1801
Waste management	1787
Economics	1684
Catalysis	1288
Materials science	1174
Environmental resource management	1042
Thermodynamics	919
Composite material	900
Electrochemistry	786
Carbon	743
Analytical chemistry	682
Anode	622
Electrolyte	563

Field of Study	Document Count
Electrode	558
Adsorption	553
Mechanics	504
Organic chemistry	500
Cathode	498
Lithium	498
Optoelectronics	486
Hydrogen	474
Nanotechnology	468
Combustion	465
Battery (electricity)	444
China	441
Pyrolysis	426
Control theory	415
Biochemistry	384
Biomass	378
Coal	377
Graphene	375
Electrocatalyst	370
Nanoparticle	351
Energy storage	348
Heat transfer	340
Control engineering	338
Thermal	323
Oxide	320
Composite number	318
Supercapacitor	314
Porosity	312
Photocatalysis	292
Metal	289
Ion	288
Energy conversion efficiency	281
Doping	276
Overpotential	276

The Lens_Top Field of Study by Average Scholar Citations.svg

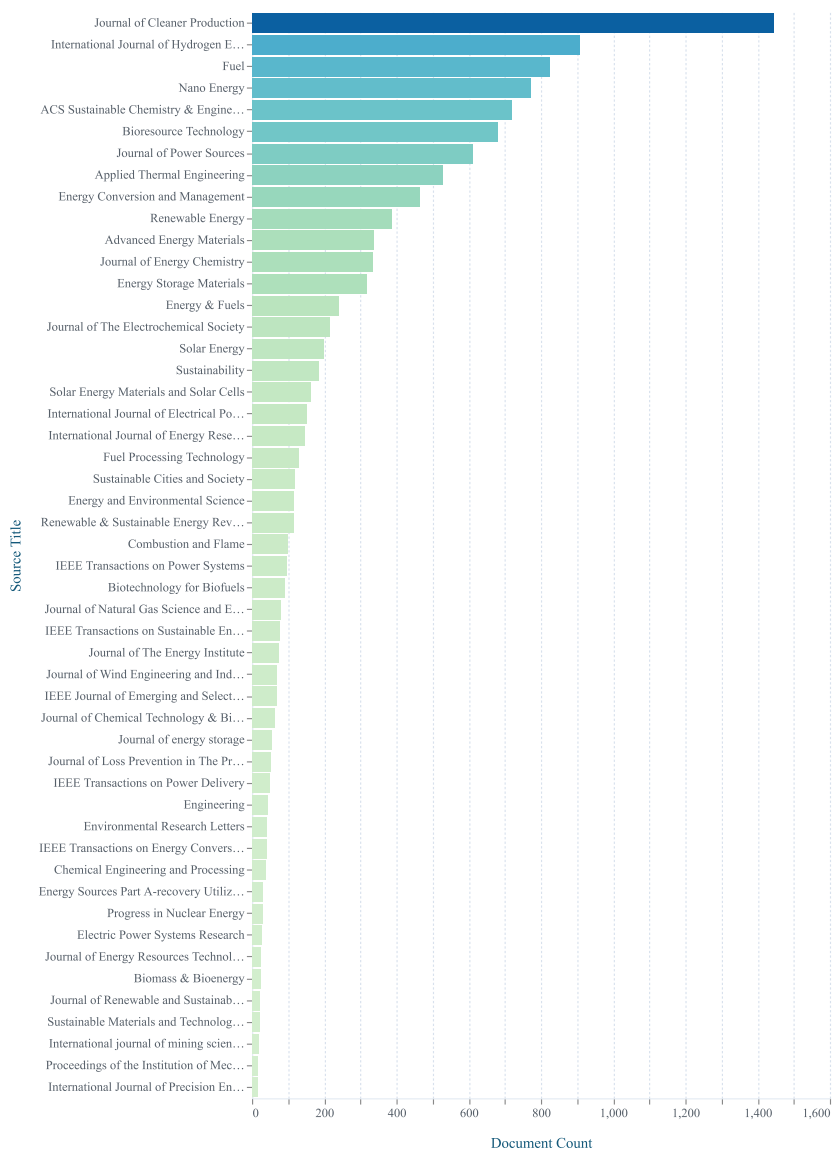


The Lens_Top Field of Study by Average Scholar Citations data.csv

Field of Study	Average Scholar Citations
Conductive polymer	109
Electrochemical reaction mechanism	84
Cation-exchange capacity	77
Chemical instability	73
Organic component	73
Organic electronics	73
Pulsed power	71
Relative density	71
Lithium hexafluorophosphate	66
Absorption edge	65
Black tea	65
Building industry	65
Crystal morphology	65
Hemihydrate	65
Normal consistency	65
Water requirement	65

Field of Study	Average Scholar Citations
Fluorine	64.5
Cyclopentyl methyl ether	63
Limiting	63
Life span	61
Strongly coupled	60
Opacity	59
Chemical bath deposition	56
Iron sulfide	56
Fill factor	55
Inhibitory effect	55
Peak pressure	55
Superatom	55
Auger electron spectroscopy	54
Low emissivity	54
Photoemission spectroscopy	54
Polyvinyl butyral	54
Bamboo	53
Phosphoric acid	53
Vortex-induced vibration	52.5
Flammable liquid	52
Lanthanum oxide	52
Oxygen vacancy	52
Performance index	51
Gypsum	50.5
Manufacturing methods	50
Electrosynthesis	49
Non-renewable resource	49
Ordinary least squares	49
Unit root test	49
Empirical evidence	48
Wind tunnel	47.5
Albedo	46
Consolidation (soil)	46
Desiccation	46

The Lens_Top Source Title by Document Count.svg

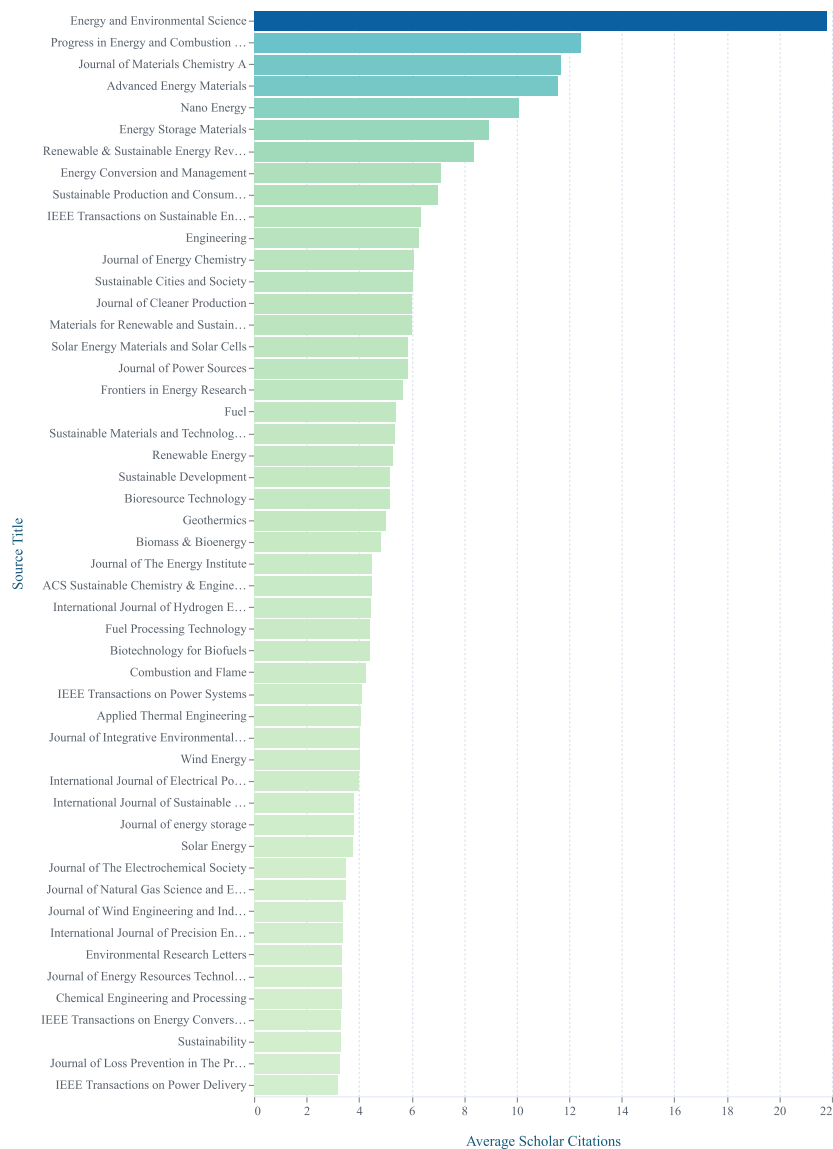


The Lens_Top Source Title by Document Count data.csv

Source Title	Document Count
Journal of Cleaner Production	1443
International Journal of Hydrogen Energy	906
Fuel	824
Nano Energy	770
ACS Sustainable Chemistry & Engineering	719
Bioresource Technology	680
Journal of Power Sources	610
Applied Thermal Engineering	527
Energy Conversion and Management	464
Renewable Energy	387
Advanced Energy Materials	335
Journal of Energy Chemistry	333
Energy Storage Materials	318
Energy & Fuels	239
Journal of The Electrochemical Society	215

Source Title	Document Count
Solar Energy	197
Sustainability	183
Solar Energy Materials and Solar Cells	163
International Journal of Electrical Power & Energy Systems	152
International Journal of Energy Research	144
Fuel Processing Technology	129
Sustainable Cities and Society	119
Energy and Environmental Science	116
Renewable & Sustainable Energy Reviews	115
Combustion and Flame	99
IEEE Transactions on Power Systems	95
Biotechnology for Biofuels	90
Journal of Natural Gas Science and Engineering	78
IEEE Transactions on Sustainable Energy	77
Journal of The Energy Institute	74
Journal of Wind Engineering and Industrial Aerodynamics	69
IEEE Journal of Emerging and Selected Topics in Power Electronics	67
Journal of Chemical Technology & Biotechnology	61
Journal of energy storage	53
Journal of Loss Prevention in The Process Industries	51
IEEE Transactions on Power Delivery	49
Engineering	44
Environmental Research Letters	40
IEEE Transactions on Energy Conversion	39
Chemical Engineering and Processing	37
Energy Sources Part A-recovery Utilization and Environmental Effects	30
Progress in Nuclear Energy	29
Electric Power Systems Research	25
Journal of Energy Resources Technology-transactions of The Asme	24
Biomass & Bioenergy	23
Journal of Renewable and Sustainable Energy	21
Sustainable Materials and Technologies	21
International journal of mining science and technology	17
Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy	16
International Journal of Precision Engineering and Manufacturing-Green Technology	14

The Lens_Top Source Title by Average Scholar Citations.svg

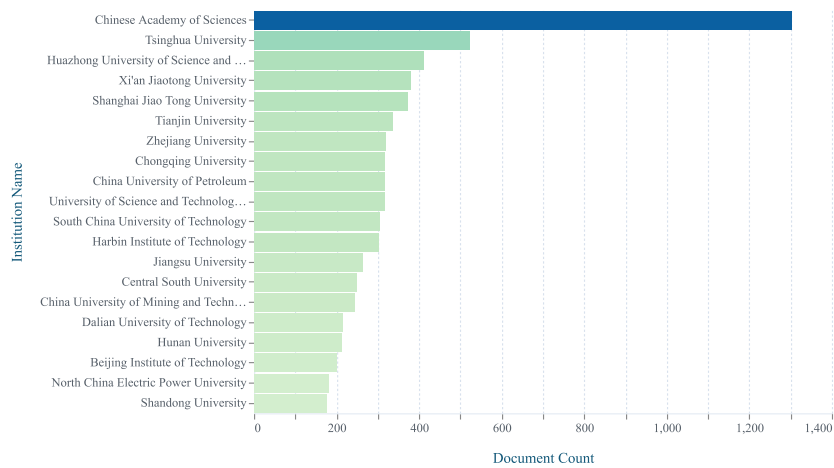


The Lens_Top Source Title by Average Scholar Citations data.csv

Source Title	Average Scholar Citations
Energy and Environmental Science	21.78448275862069
Progress in Energy and Combustion Science	12.428571428571429
Journal of Materials Chemistry A	11.666666666666666
Advanced Energy Materials	11.555223880597016
Nano Energy	10.083116883116883
Energy Storage Materials	8.921383647798741
Renewable & Sustainable Energy Reviews	8.373913043478261
Energy Conversion and Management	7.0969827586206895
Sustainable Production and Consumption	7
IEEE Transactions on Sustainable Energy	6.324675324675325
Engineering	6.2727272727272725
Journal of Energy Chemistry	6.09009009009009
Sustainable Cities and Society	6.042016806722689
Journal of Cleaner Production	6.002772002772002
Materials for Renewable and Sustainable Energy	6

Source Title	Average Scholar Citations
Solar Energy Materials and Solar Cells	5.852760736196319
Journal of Power Sources	5.839344262295082
Frontiers in Energy Research	5.666666666666667
Fuel	5.388349514563107
Sustainable Materials and Technologies	5.333333333333333
Renewable Energy	5.2661498708010335
Sustainable Development	5.166666666666667
Bioresource Technology	5.139705882352941
Geothermics	5
Biomass & Bioenergy	4.826086956521739
Journal of The Energy Institute	4.45945945945946
ACS Sustainable Chemistry & Engineering	4.457579972183589
International Journal of Hydrogen Energy	4.453642384105961
Fuel Processing Technology	4.403100775193798
Biotechnology for Biofuels	4.4
Combustion and Flame	4.232323232323233
IEEE Transactions on Power Systems	4.073684210526316
Applied Thermal Engineering	4.036053130929791
Journal of Integrative Environmental Sciences	4
Wind Energy	4
International Journal of Electrical Power & Energy Systems	3.986842105263158
International Journal of Sustainable Transportation	3.8
Journal of energy storage	3.7735849056603774
Solar Energy	3.766497461928934
Journal of The Electrochemical Society	3.4930232558139536
Journal of Natural Gas Science and Engineering	3.4871794871794872
Journal of Wind Engineering and Industrial Aerodynamics	3.36231884057971
International Journal of Precision Engineering and Manufacturing-Green Technology	3.357142857142857
Environmental Research Letters	3.35
Journal of Energy Resources Technology-transactions of The Asme	3.3333333333333335
Chemical Engineering and Processing	3.324324324324324
IEEE Transactions on Energy Conversion	3.3076923076923075
Sustainability	3.2950819672131146
Journal of Loss Prevention in The Process Industries	3.2549019607843137
IEEE Transactions on Power Delivery	3.183673469387755

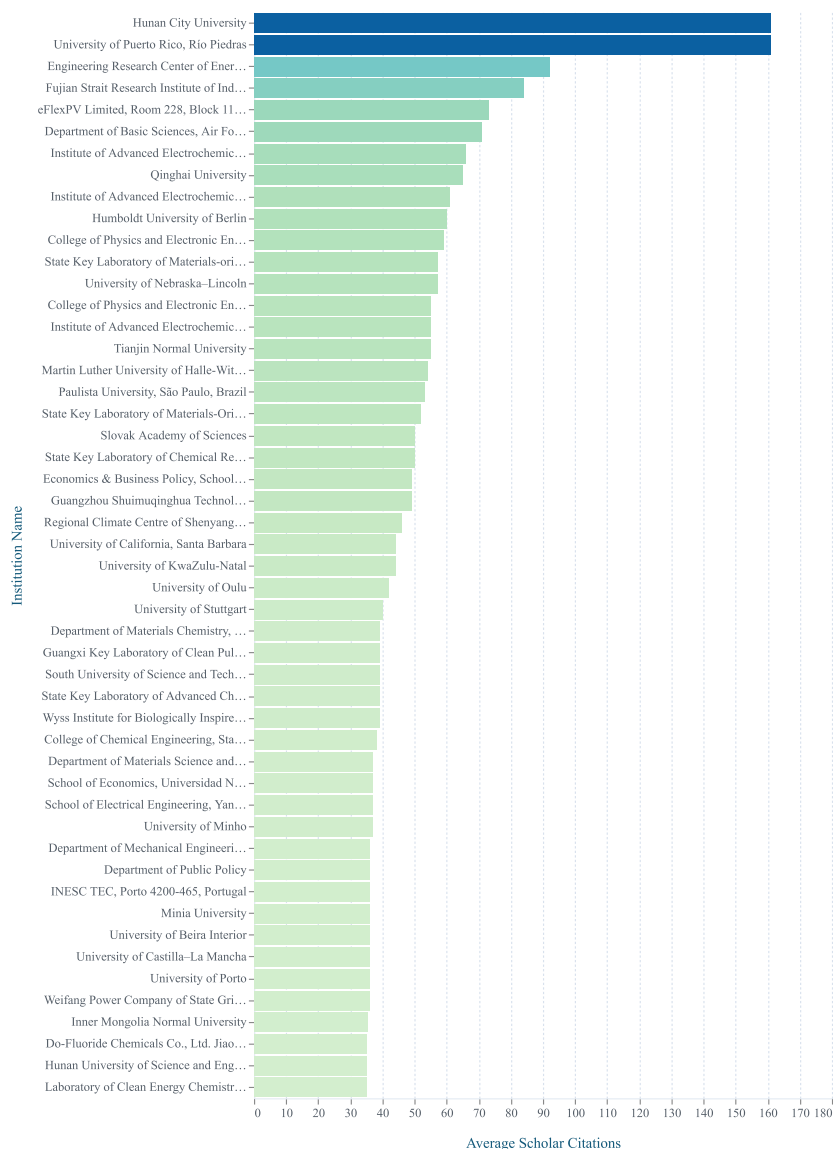
The Lens_Top Institution Name by Document Count.svg



The Lens_Top Institution Name by Document Count data.csv

Institution Name	Document Count
Chinese Academy of Sciences	1303
Tsinghua University	522
Huazhong University of Science and Technology	411
Xi'an Jiaotong University	378
Shanghai Jiao Tong University	371
Tianjin University	336
Zhejiang University	319
Chongqing University	317
China University of Petroleum	315
University of Science and Technology of China	315
South China University of Technology	305
Harbin Institute of Technology	301
Jiangsu University	262
Central South University	249
China University of Mining and Technology	243
Dalian University of Technology	215
Hunan University	213
Beijing Institute of Technology	199
North China Electric Power University	180
Shandong University	176

The Lens_Top Institution Name by Average Scholar Citations.svg



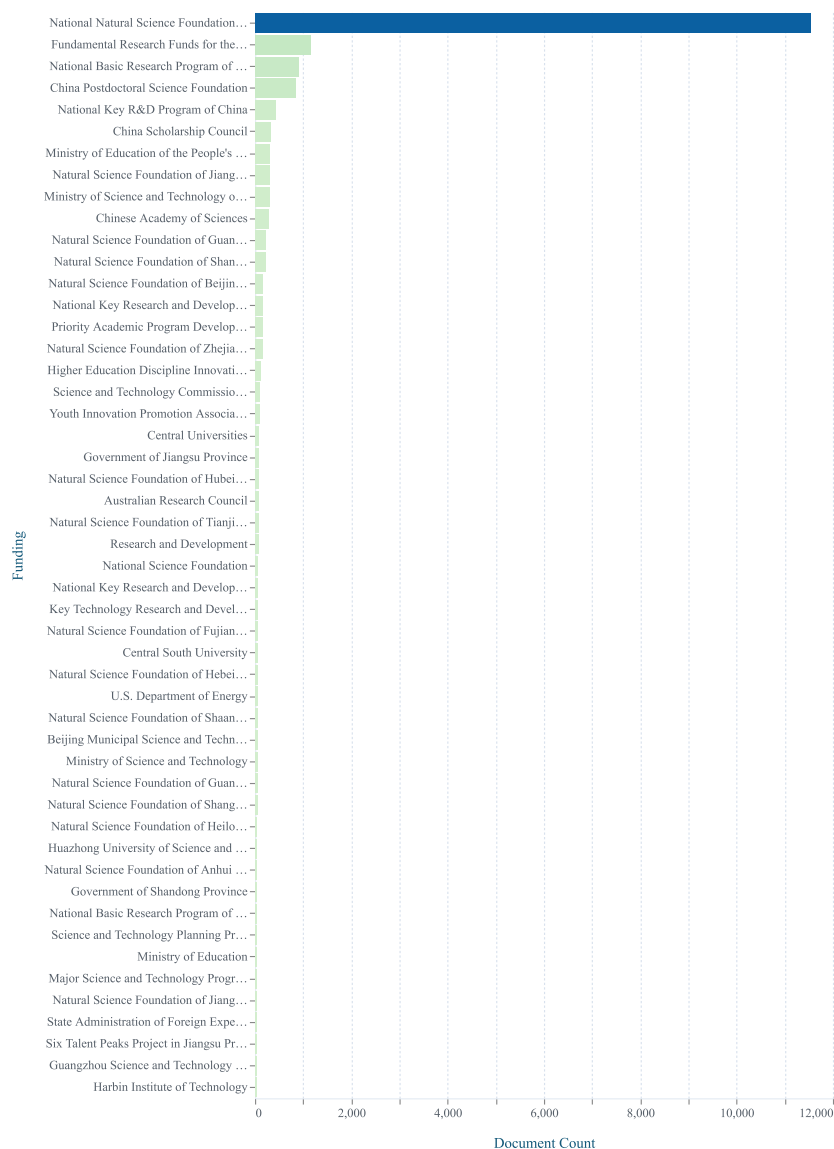
The Lens_Top Institution Name by Average Scholar Citations data.csv

Institution Name	Average Scholar Citations
Hunan City University	161
University of Puerto Rico, Río Piedras	161
Engineering Research Center of Energy Saving Technology and Equipment of Thermal Energy System, Ministry of Education, Zhengzhou 450000, China	92
Fujian Strait Research Institute of Industrial Graphene Technologies, Sanchuang Park, Sunei Community, Century Avenue, Jinjiang, Fujian 362200, PR China	84
eFlexPV Limited, Room 228, Block 11, Jin Xiu Da Di, No. 121 Hu Di Pai, Song Yuan Sha Community, Guanhu Street, Longhua District, Shenzhen, China	73
Department of Basic Sciences, Air Force Engineering University, Xi'an 710051, China	71
Institute of Advanced Electrochemical Energy & School of Materials Science and Engineering, Xi'an University of Technology, Xi'an, 710048, China	66
Qinghai University	65
Institute of Advanced Electrochemical Energy, Xi'an University of Technology, Xi'an 710048, Shaanxi, China	61
Humboldt University of Berlin	60

Institution Name	Average Scholar Citations
College of Physics and Electronic Engineering, Taishan University, Taian 271021, PR China	59
State Key Laboratory of Materials-oriented Chemical Engineering, and School of Energy Science and Engineering, and Institute for Advanced Materials, Nanjing Tech University, Nanjing 211816, China	57
University of Nebraska–Lincoln	57
College of Physics and Electronic Engineering, Taishan University, 271021, Taian, China	55
Institute of Advanced Electrochemical Energy & School of Materials Science and Engineering, Xi'an University of Technology, Xi'an 710048, China	55
Tianjin Normal University	55
Martin Luther University of Halle-Wittenberg	54
Paulista University, São Paulo, Brazil	53
State Key Laboratory of Materials-Oriented Chemical Engineering, and School of Energy Science and Engineering, and Institute for Advanced Materials Nanjing Tech University Nanjing 211816 China	52
Slovak Academy of Sciences	50
State Key Laboratory of Chemical Resource Engineering, College of Energy, Beijing Advanced Innovation Centre for Soft Matter Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, China	50
Economics & Business Policy, School of Management & Entrepreneurship, Atria Institute of Technology, Bangalore, India	49
Guangzhou Shuimuqinghua Technology Co. LTD., 510898, Guangzhou, China	49
Regional Climate Centre of Shenyang, Liaoning Meteorological Bureau, Shenyang, 110166, China	46
University of California, Santa Barbara	44
University of KwaZulu-Natal	44
University of Oulu	42
University of Stuttgart	40
Department of Materials Chemistry, Huzhou University, Huzhou 313000, China	39
Guangxi Key Laboratory of Clean Pulp & Papermaking and Pollution Control, Nanning, China	39
South University of Science and Technology of China	39
State Key Laboratory of Advanced Chemical Power Sources, Guizhou Meiling Power Sources Co. Ltd, Zunyi, Guizhou, 563003, China	39
Wyss Institute for Biologically Inspired Engineering	39
College of Chemical Engineering, State Key Laboratory of Materials-Oriented Chemical Engineering, Nanjing Tech University, Nanjing 210009, China	38
Department of Materials Science and Engineering, Peking University, China	37
School of Economics, Universidad Nacional de Loja, Pío Jaramillo Avenue, Loja, 110103, Ecuador	37
School of Electrical Engineering, Yancheng Institute of Technology, Yancheng, 224051, China	37
University of Minho	37

Institution Name	Average Scholar Citations
Department of Mechanical Engineering, University of Blue Nile, Faculty of Engineering, Al Roseires, Blue Nile State, Sudan	36
Department of Public Policy	36
INESC TEC, Porto 4200-465, Portugal	36
Minia University	36
University of Beira Interior	36
University of Castilla–La Mancha	36
University of Porto	36
Weifang Power Company of State Grid Shandong Electric Power Company, Weifang 261000, China	36
Inner Mongolia Normal University	35.5
Do-Fluoride Chemicals Co., Ltd. Jiaoke Road, Zhongzhan District Jiaozuo Henan 454006 China	35
Hunan University of Science and Engineering	35
Laboratory of Clean Energy Chemistry and Materials State Key Laboratory of Solid Lubrication Lanzhou Institute of Chemical Physics Chinese Academy of Sciences Lanzhou 730000 China	35

The Lens_Top Funding by Document Count.svg

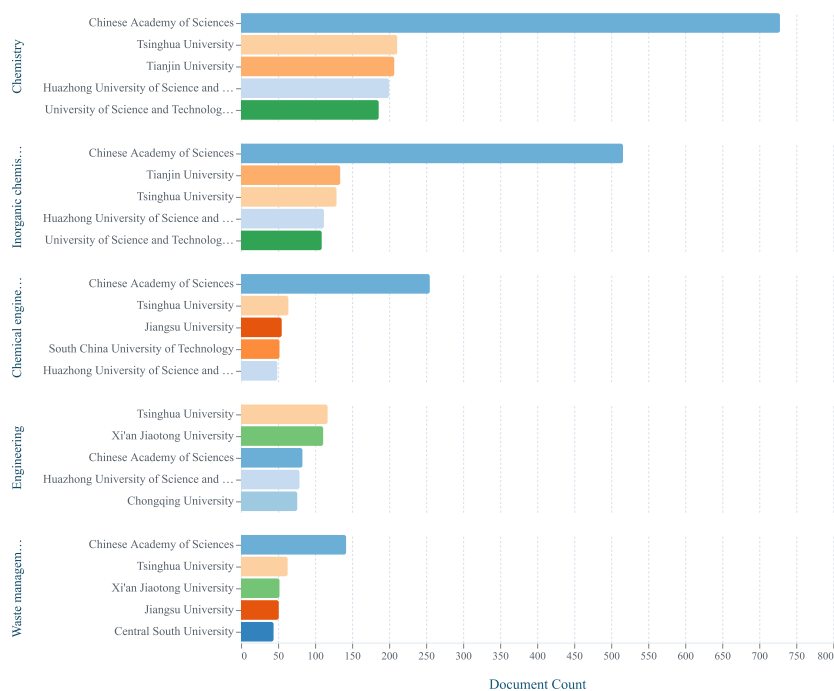


The Lens_Top Funding by Document Count data.csv

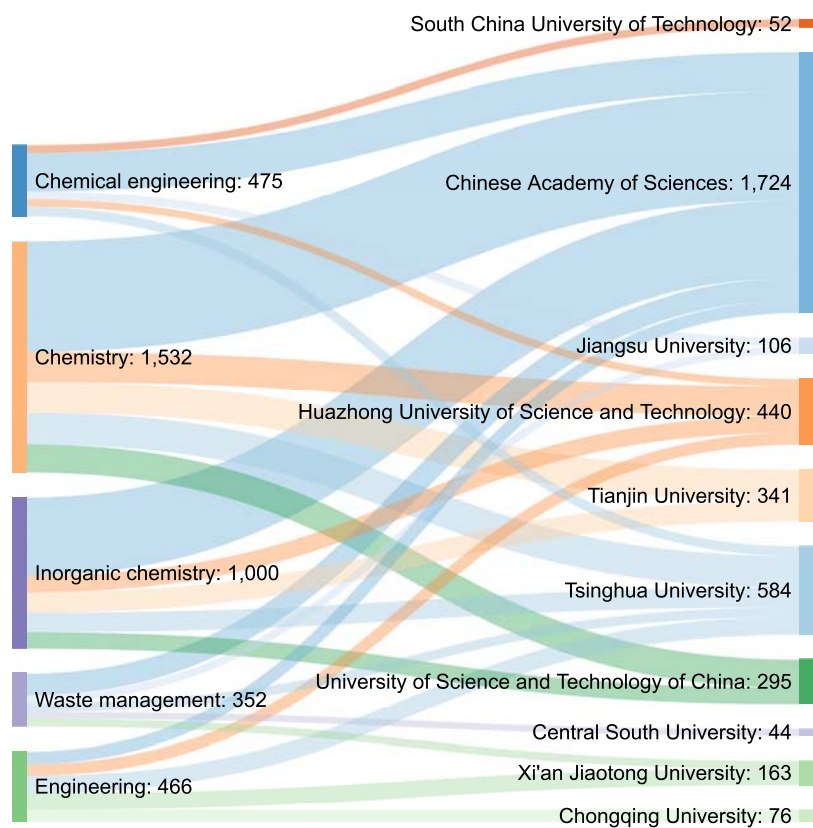
Funding	Document Count
National Natural Science Foundation of China	11533
Fundamental Research Funds for the Central Universities	1154
National Basic Research Program of China (973 Program)	903
China Postdoctoral Science Foundation	846
National Key R&D Program of China	420
China Scholarship Council	329
Ministry of Education of the People's Republic of China	310
Natural Science Foundation of Jiangsu Province	296
Ministry of Science and Technology of the People's Republic of China	295
Chinese Academy of Sciences	284
Natural Science Foundation of Guangdong Province	228
Natural Science Foundation of Shandong Province	227
Natural Science Foundation of Beijing Municipality	161
National Key Research and Development Program of China	150
Priority Academic Program Development of Jiangsu Higher Education Institutions	149

Funding	Document Count
Natural Science Foundation of Zhejiang Province	147
Higher Education Discipline Innovation Project	107
Science and Technology Commission of Shanghai Municipality	84
Youth Innovation Promotion Association of the Chinese Academy of Sciences	84
Central Universities	81
Government of Jiangsu Province	78
Natural Science Foundation of Hubei Province	74
Australian Research Council	72
Natural Science Foundation of Tianjin City	67
Research and Development	64
National Science Foundation	60
National Key Research and Development Program of China Stem Cell and Translational Research	51
Key Technology Research and Development Program of Shandong	48
Natural Science Foundation of Fujian Province	48
Central South University	47
Natural Science Foundation of Hebei Province	46
U.S. Department of Energy	46
Natural Science Foundation of Shaanxi Province	45
Beijing Municipal Science and Technology Commission	44
Ministry of Science and Technology	44
Natural Science Foundation of Guangxi Province	43
Natural Science Foundation of Shanghai	43
Natural Science Foundation of Heilongjiang Province	41
Huazhong University of Science and Technology	40
Natural Science Foundation of Anhui Province	40
Government of Shandong Province	37
National Basic Research Program of China	37
Science and Technology Planning Project of Guangdong Province	37
Ministry of Education	36
Major Science and Technology Program for Water Pollution Control and Treatment	33
Natural Science Foundation of Jiangxi Province	32
State Administration of Foreign Experts Affairs	32
Six Talent Peaks Project in Jiangsu Province	31
Guangzhou Science and Technology Program key projects	30
Harbin Institute of Technology	30

The Lens_Top Institution Name by Field of Study compared by Document Count.svg



The Lens_Top Institution Name by Field of Study compared by Document Count Sunkey.svg

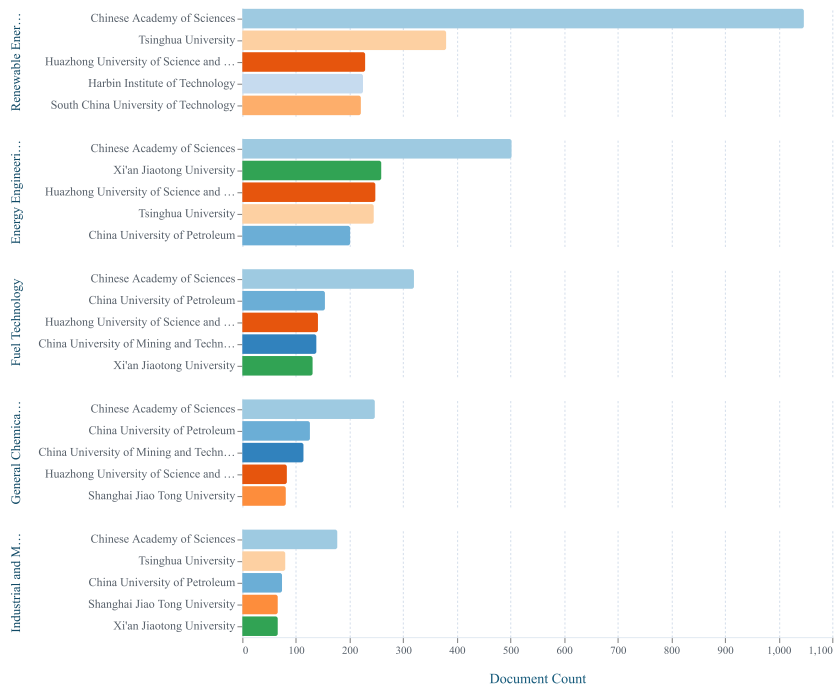


The Lens_Top Institution Name by Field of Study compared by Document Count data.csv

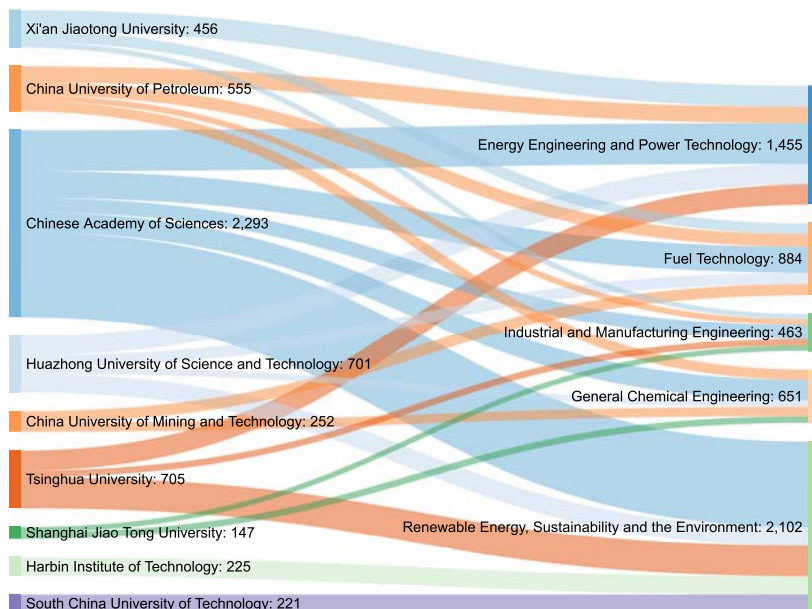
Field of Study	Document Count	Institution Name
Chemical engineering	255	Chinese Academy of Sciences
Chemical engineering	64	Tsinghua University
Chemical engineering	55	Jiangsu University
Chemical engineering	52	South China University of Technology
Chemical engineering	49	Huazhong University of Science and Technology
Chemistry	728	Chinese Academy of Sciences

Field of Study	Document Count	Institution Name
Chemistry	211	Tsinghua University
Chemistry	207	Tianjin University
Chemistry	200	Huazhong University of Science and Technology
Chemistry	186	University of Science and Technology of China
Engineering	117	Tsinghua University
Engineering	111	Xi'an Jiaotong University
Engineering	83	Chinese Academy of Sciences
Engineering	79	Huazhong University of Science and Technology
Engineering	76	Chongqing University
Inorganic chemistry	516	Chinese Academy of Sciences
Inorganic chemistry	134	Tianjin University
Inorganic chemistry	129	Tsinghua University
Inorganic chemistry	112	Huazhong University of Science and Technology
Inorganic chemistry	109	University of Science and Technology of China
Waste management	142	Chinese Academy of Sciences
Waste management	63	Tsinghua University
Waste management	52	Xi'an Jiaotong University
Waste management	51	Jiangsu University
Waste management	44	Central South University

The Lens_Top Institution Name by Subject compared by Document Count.svg



The Lens_Top Institution Name by Subject compared by Document Count Sunkey.svg



The Lens_Top Institution Name by Subject compared by Document Count data.csv

Subject	Document Count	Institution Name
Energy Engineering and Power Technology	502	Chinese Academy of Sciences
Energy Engineering and Power Technology	259	Xi'an Jiaotong University
Energy Engineering and Power Technology	248	Huazhong University of Science and Technology
Energy Engineering and Power Technology	245	Tsinghua University
Energy Engineering and Power Technology	201	China University of Petroleum
Fuel Technology	320	Chinese Academy of Sciences
Fuel Technology	154	China University of Petroleum
Fuel Technology	141	Huazhong University of Science and Technology
Fuel Technology	138	China University of Mining and Technology
Fuel Technology	131	Xi'an Jiaotong University
General Chemical Engineering	247	Chinese Academy of Sciences
General Chemical Engineering	126	China University of Petroleum
General Chemical Engineering	114	China University of Mining and Technology
General Chemical Engineering	83	Huazhong University of Science and Technology
General Chemical Engineering	81	Shanghai Jiao Tong University
Industrial and Manufacturing Engineering	177	Chinese Academy of Sciences
Industrial and Manufacturing Engineering	80	Tsinghua University
Industrial and Manufacturing Engineering	74	China University of Petroleum
Industrial and Manufacturing Engineering	66	Shanghai Jiao Tong University

Subject	Document Count	Institution Name
Industrial and Manufacturing Engineering	66	Xi'an Jiaotong University
Renewable Energy, Sustainability and the Environment	1047	Chinese Academy of Sciences
Renewable Energy, Sustainability and the Environment	380	Tsinghua University
Renewable Energy, Sustainability and the Environment	229	Huazhong University of Science and Technology
Renewable Energy, Sustainability and the Environment	225	Harbin Institute of Technology
Renewable Energy, Sustainability and the Environment	221	South China University of Technology

VOSviewer

Top 30 of 995 from The Lens_VOSviewer_Fields of Study as KW.tsv

keyword	occurrences	total link strength
chemistry	6354	44562
inorganic chemistry	3989	29652
chemical engineering	2067	16675
engineering	1801	10433
waste management	1787	12145
economics	1684	9250
catalysis	1288	10126
materials science	1174	8938
environmental resource management	1042	5177
thermodynamics	919	6471
composite material	900	6451
electrochemistry	786	6419
carbon	743	6004
analytical chemistry	682	5090
anode	622	5123
electrolyte	563	4623
electrode	558	4644
adsorption	553	4340
mechanics	504	3316
organic chemistry	500	3155
cathode	498	4098
lithium	498	3947
optoelectronics	486	3712
hydrogen	474	3692
nanotechnology	468	3014
combustion	465	3558
battery (electricity)	444	3492

keyword	occurrences	total link strength
anode	622	5123
electrolyte	563	4623
electrode	558	4644
adsorption	553	4340
mechanics	504	3316
organic chemistry	500	3155
cathode	498	4098
lithium	498	3947
optoelectronics	486	3712
hydrogen	474	3692
nanotechnology	468	3014
combustion	465	3558
battery (electricity)	444	3492
china	441	2386
pyrolysis	426	3421
control theory	415	2052

The Lens_VOSviewer_Fields of Study as KW cluster_2.csv

label	cluster	Links	Occurrences
chemistry	2	937	6354
waste management	2	821	1787
organic chemistry	2	479	500
pyrolysis	2	434	426
biochemistry	2	259	384
biomass	2	422	378
hydrogen production	2	373	273
nuclear chemistry	2	343	261
pulp and paper industry	2	283	258
environmental chemistry	2	251	231
food science	2	159	196
wastewater	2	272	193
sludge	2	244	182
cellulose	2	259	170
nitrogen	2	312	170
lignin	2	213	161
selectivity	2	268	153
fermentation	2	158	151
hydrolysis	2	211	142
fourier transform infrared spectroscopy	2	259	140

The Lens_VOSviewer_Fields of Study as KW cluster_3.csv

label	cluster	Links	Occurrences
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label	cluster	Links	Occurrences
inorganic chemistry	3	861	3989
chemical engineering	3	710	2067
catalysis	3	554	1288
electrochemistry	3	437	786
carbon	3	620	743
anode	3	426	622
electrolyte	3	397	563
electrode	3	389	558
cathode	3	391	498
lithium	3	362	498
nanotechnology	3	357	468
battery (electricity)	3	393	444
graphene	3	393	375
electrocatalyst	3	245	370
nanoparticle	3	371	351
energy storage	3	387	350
oxide	3	389	320
composite number	3	402	318
supercapacitor	3	272	314
ion	3	351	290

The Lens_VOSviewer_Fields of Study as KW cluster_4.csv

label	cluster	Links	Occurrences
materials science	4	557	1174
composite material	4	615	900
optoelectronics	4	337	486
photocatalysis	4	302	292
energy conversion efficiency	4	357	283
doping	4	346	276
physics	4	400	258
perovskite	4	244	251
x-ray photoelectron spectroscopy	4	333	201
heterojunction	4	252	193
polymer	4	312	193
fabrication	4	316	175
optics	4	306	174
nanocomposite	4	291	150
coating	4	289	141
density functional theory	4	238	118
thermal stability	4	253	117
photochemistry	4	208	116
visible spectrum	4	175	96

label	cluster	Links	Occurrences
molecule	4	225	94

The Lens_VOSviewer_Fields of Study as KW cluster_5.csv

label	cluster	Links	Occurrences
adsorption	5	530	553
coal	5	428	377
porosity	5	447	312
petroleum engineering	5	228	152
scanning electron microscope	5	307	147
microstructure	5	277	133
particle	5	295	120
metallurgy	5	198	110
particle size	5	288	103
desorption	5	250	100
geotechnical engineering	5	158	98
flue gas	5	221	97
oil shale	5	141	97
coal mining	5	164	90
natural gas	5	193	86
fly ash	5	191	82
environmentally friendly	5	245	79
carbon dioxide	5	217	76
viscosity	5	178	72
slag	5	154	63

The Lens_VOSviewer_Fields of Study as KW cluster_6.csv

label	cluster	Links	Occurrences
economics	6	685	1684
environmental resource management	6	287	1042
china	6	192	441
environmental economics	6	158	195
energy consumption	6	289	193
greenhouse gas	6	230	170
natural resource economics	6	121	168
sustainable development	6	135	166
sustainability	6	157	138
efficient energy use	6	224	114
pollution	6	192	113
government	6	88	99
environmental pollution	6	262	93
pollutant	6	206	90
population	6	191	88

label	cluster	Links	Occurrences
urbanization	6	88	87
beijing	6	131	82
environmental engineering	6	176	78
fossil fuel	6	198	72
industrial organization	6	47	65

The Lens_VOSviewer_Fields of Study as KW cluster_7.csv

label	cluster	Links	Occurrences
analytical chemistry	7	624	682
hydrogen	7	518	474
combustion	7	382	465
oxygen	7	382	236
methane	7	357	229
ignition system	7	194	151
diesel fuel	7	187	134
nox	7	204	131
kinetics	7	289	130
syngas	7	229	120
soot	7	142	103
combustor	7	154	73
laminar flow	7	137	72
atmospheric temperature range	7	225	70
reaction mechanism	7	203	67
steam reforming	7	138	67
gasoline	7	122	64
kinetic energy	7	173	64
sintering	7	154	55
chemical looping combustion	7	118	53

End of the Lens Data

Web of Science Data. 2019-2020. filter: Science Categories="ENERGY FUELS". 72037 Records. Top 10 rows only. See other data at figshare

WoS_analyze-Web of Science Categories.tsv

Web of Science Categories	records
ENERGY FUELS	72037
ENGINEERING CHEMICAL	15413
CHEMISTRY PHYSICAL	14768
MATERIALS SCIENCE MULTIDISCIPLINARY	11775
THERMODYNAMICS	10280

Web of Science Categories	records
ELECTROCHEMISTRY	7023
GREEN SUSTAINABLE SCIENCE TECHNOLOGY	6864
MECHANICS	4318
ENGINEERING MECHANICAL	4197
ENGINEERING PETROLEUM	3640

WoS_analyze-Source Titles.tsv

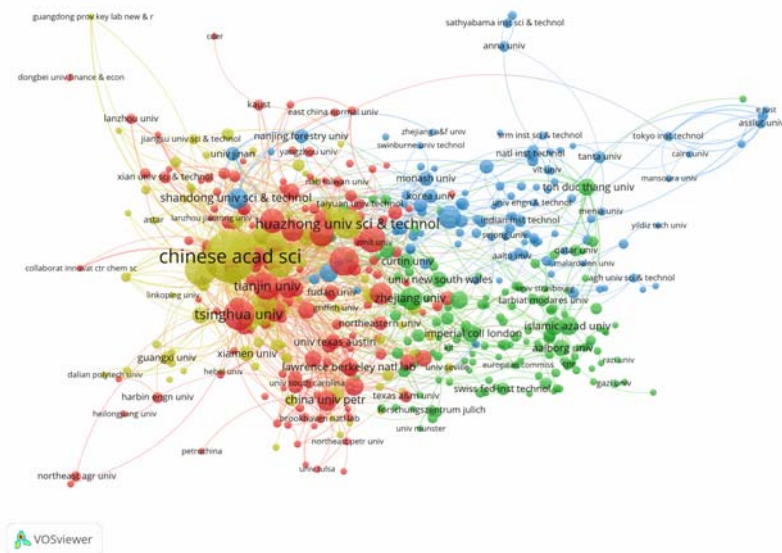
Source Titles	records
ENERGIES	6872
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY	4214
FUEL	3858
ENERGY	3689
JOURNAL OF MATERIALS CHEMISTRY A	3543
RENEWABLE ENERGY	3293
APPLIED ENERGY	2773
APPLIED THERMAL ENGINEERING	2469
BIORESOURCE TECHNOLOGY	2438
JOURNAL OF POWER SOURCES	2093

WoS_analyze-Organizations-Enhanced.tsv

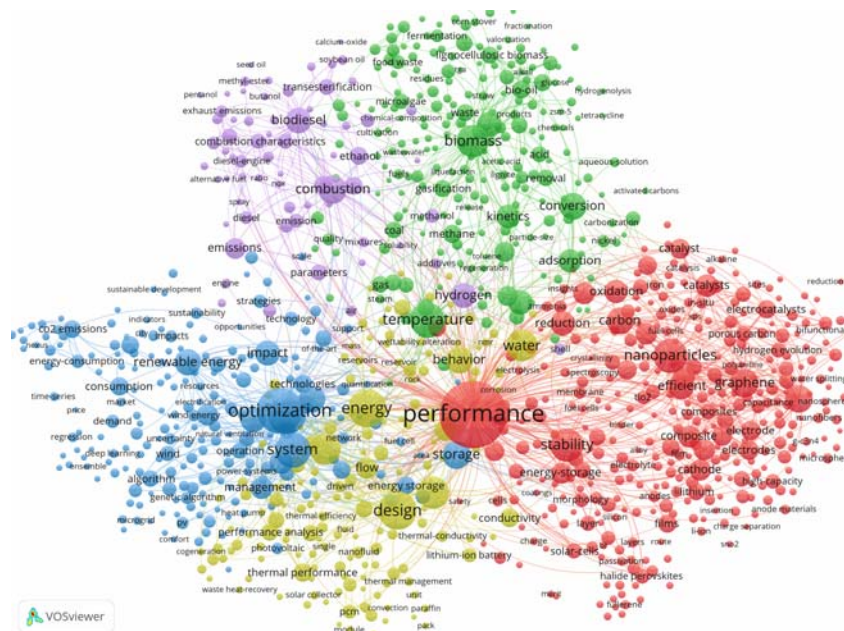
Organizations-Enhanced	records
CHINESE ACADEMY OF SCIENCES	3770
CHINA UNIVERSITY OF PETROLEUM	1594
UNITED STATES DEPARTMENT OF ENERGY DOE	1561
UNIVERSITY OF CHINESE ACADEMY OF SCIENCES CAS	1353
TSINGHUA UNIVERSITY	1259
INDIAN INSTITUTE OF TECHNOLOGY SYSTEM IIT SYSTEM	1165
XI AN JIAOTONG UNIVERSITY	1043
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	969
CHINA UNIVERSITY OF MINING TECHNOLOGY	969
TIANJIN UNIVERSITY	924

WoS_analyze-Funding Agencies.tsv

Funding Agencies	records
NATIONAL NATURAL SCIENCE FOUNDATION OF CHINA	20490
FUNDAMENTAL RESEARCH FUNDS FOR THE CENTRAL UNIVERSITIES	3713
NATIONAL KEY R D PROGRAM OF CHINA	1939
UNITED STATES DEPARTMENT OF ENERGY DOE	1923
CHINA POSTDOCTORAL SCIENCE FOUNDATION	1853
NATIONAL KEY RESEARCH AND DEVELOPMENT PROGRAM OF CHINA	1843
EUROPEAN UNION EU	1509
CHINA SCHOLARSHIP COUNCIL	1323



WoS_top_10000_KW co-occurrence.gif



See other charts and data at figshare: <https://figshare.com/s/d131550592a075a9e376>

- WoS_top_10000_Authors in co-authorship.gif
- WoS_top_10000_Authors in co-authorship.txt
- WoS_top_10000_Countries in co-authorship.txt
- WoS_top_10000_Countries in co-authorship.gif
- WoS_top_10000_KW co-occurrence blue.gif
- WoS_top_10000_KW co-occurrence ellow.gif
- WoS_top_10000_KW co-occurrence green.gif
- WoS_top_10000_KW co-occurrence red.gif
- WoS_top_10000_KW co-occurrence.gif
- WoS_top_10000_KW co-occurrence.txt
- WoS_top_10000_Organizations in co-authorship L.gif
- WoS_top_10000_Organizations in co-authorship map.txt
- WoS_top_10000_Organizations in co-authorship net.txt
- WoS_top_10000_Organizations in co-authorship R.gif
- WoS_top_10000_Organizations in co-authorship.gif
- WoS_top_10000_Organizations in co-authorship.txt

Reference

1. Van Eck, N.J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538.