Umut Aydemir

List of Publications by Year
in descending order

91	3,625	109264	138417
papers	citations	35 h-index	58 g-index

101	101	101	3330
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Engineering half-Heusler thermoelectric materials using Zintl chemistry. Nature Reviews Materials, 2016, 1, .	23.3	340
2	Understanding thermoelectric properties from high-throughput calculations: trends, insights, and comparisons with experiment. Journal of Materials Chemistry C, 2016, 4, 4414-4426.	2.7	193
3	Unique Role of Refractory Ta Alloying in Enhancing the Figure of Merit of NbFeSb Thermoelectric Materials. Advanced Energy Materials, 2018, 8, 1701313.	10.2	181
4	An ab initio electronic transport database for inorganic materials. Scientific Data, 2017, 4, 170085.	2.4	146
5	Meltâ€Centrifuged (Bi,Sb)₂Te₃: Engineering Microstructure toward High Thermoelectric Efficiency. Advanced Materials, 2018, 30, e1802016.	11.1	133
6	Achieving zT > 1 in Inexpensive Zintl Phase Ca₉Zn₄₊_xSb₉ by Phase Boundary Mapping. Advanced Functional Materials, 2017, 27, 1606361.	7.8	129
7	A valence balanced rule for discovery of 18-electron half-Heuslers with defects. Energy and Environmental Science, 2018, 11, 1480-1488.	15.6	105
8	Computational and experimental investigation of TmAgTe₂and XYZ₂compounds, a new group of thermoelectric materials identified by first-principles high-throughput screening. Journal of Materials Chemistry C, 2015, 3, 10554-10565.	2.7	99
9	Enhanced stability and thermoelectric figure-of-merit in copper selenide by lithium doping. Materials Today Physics, 2017, 1, 7-13.	2.9	93
10	TiB2â€“SiC-based ceramics as alternative efficient micro heat exchangers. Ceramics International, 2019, 45, 19060-19067.	2.3	85
11	Crystal structure and transport properties of Ba8Ge43â–¡3. Dalton Transactions, 2010, 39, 1078-1088.	1.6	77
12	Atomic ordering and thermoelectric properties of the n-type clathrate Ba8Ni3.5Ge42.1â–¡0.4. Dalton Transactions, 2010, 39, 1071-1077.	1.6	74
13	SnO as a potential oxide thermoelectric candidate. Journal of Materials Chemistry C, 2017, 5, 8854-8861.	2.7	72
14	Selfâ€Tuning nâ€Type Bi₂(Te,Se)₃/SiC Thermoelectric Nanocomposites to Realize High Performances up to 300 Â°C. Advanced Science, 2017, 4, 1700259.	5.6	72
15	Observation of valence band crossing: the thermoelectric properties of CaZn₂Sb₂â€“CaMg₂Sb₂ solid solution. Journal of Materials Chemistry A, 2018, 6, 9437-9444.	5.2	70
16	Î±- and Î²-Na2[BH4][NH2]: Two modifications of a complex hydride in the system NaNH2â€“NaBH4; syntheses, crystal structures, thermal analyses, mass and vibrational spectra. Journal of Alloys and Compounds, 2010, 491, 98-105.	2.8	55
17	Thermoelectric Enhancement in BaGa₂Sb₂ by Zn Doping. Chemistry of Materials, 2015, 27, 1622-1630.	3.2	53
18	Superstrengthening <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow><mml:mi>Bi</mml:mi></mml:mrow><mml:mn>2</mml:mn></mml:msub><mm through Nanotwinning. Physical Review Letters, 2017, 119, 085501.	2.9	53

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19	Metal phosphides as potential thermoelectric materials. Journal of Materials Chemistry C, 2017, 5, 12441-12456.	2.7	53
20	High thermoelectric performance enabled by convergence of nested conduction bands in Pb7Bi4Se13 with low thermal conductivity. Nature Communications, 2021, 12, 4793.	5.8	53
21	YCuTe₂: a member of a new class of thermoelectric materials with CuTe₄-based layered structure. Journal of Materials Chemistry A, 2016, 4, 2461-2472.	5.2	52
22	Key properties of inorganic thermoelectric materialsâ€"tables (version 1). JPhys Energy, 2022, 4, 022002.	2.3	51
23	Ideal Strength and Deformation Mechanism in High-Efficiency Thermoelectric SnSe. Chemistry of Materials, 2017, 29, 2382-2389.	3.2	50
24	Giant enhancement of the figure-of-merit over a broad temperature range in nano-boron incorporated Cu₂Se. Journal of Materials Chemistry A, 2018, 6, 18409-18416.	5.2	49
25	Apparent critical phenomena in the superionic phase transition of Cu_{2-x}Se. New Journal of Physics, 2016, 18, 013024.	1.2	48
26	Enhanced ideal strength of thermoelectric half-Heusler TiNiSn by sub-structure engineering. Journal of Materials Chemistry A, 2016, 4, 14625-14636.	5.2	48
27	A computational assessment of the electronic, thermoelectric, and defect properties of bournonite (CuPbSbS₃) and related substitutions. Physical Chemistry Chemical Physics, 2017, 19, 6743-6756.	1.3	47
28	Ultrahigh figureâ€ofâ€merit of Cu₂Se incorporated with carbon coated boron nanoparticles. InformaÄnÂ-MateriÃ¡ly, 2019, 1, 108-115.	8.5	47
29	Micro- and Macromechanical Properties of Thermoelectric Lead Chalcogenides. ACS Applied Materials & Interfaces, 2017, 9, 40488-40496.	4.0	45
30	The Metallic Zintl Phase Ba₃Si₄ â€“ Synthesis, Crystal Structure, Chemical Bonding, and Physical Properties. Zeitschrift Fur Anorganische Und Allgemeine Chemie, 2008, 634, 1651-1661.	0.6	44
31	Low-temperature thermoelectric, galvanomagnetic, and thermodynamic properties of the type-I clathrate Ba<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mn>8</mml:mn></mml:msub></mml:math>Au<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mi>x</mml:mi></mml:msub></mml:math>Si<mml:math xmlns:mml="http://www.w3.org/1998/Ma	1.1	44
32	Localized Symmetry Breaking for Tuning Thermal Expansion in ScF₃ Nanoscale Frameworks. Journal of the American Chemical Society, 2018, 140, 4477-4480.	6.6	44
33	BaGe₅: A New Type of Intermetallic Clathrate. Journal of the American Chemical Society, 2010, 132, 10984-10985.	6.6	39
34	Fracture toughness of thermoelectric materials. Materials Science and Engineering Reports, 2021, 144, 100607.	14.8	39
35	Thermoelectric properties of the Zintl phases Yb₅M₂Sb₆(M = Al,) Tj ETQq1 1 0.784314 rgBT /O	1.6	38
36	Crystal Structure and Atomic Vacancy Optimized Thermoelectric Properties in Gadolinium Selenides. Chemistry of Materials, 2020, 32, 10130-10139.	3.2	36

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37	Grain boundary engineering with nano-scale InSb producing high performance In Ce Co4Sb12+ skutterudite thermoelectrics. Journal of Materiomics, 2017, 3, 273-279.	2.8	33
38	Deformation mechanisms in high-efficiency thermoelectric layered Zintl compounds. Journal of Materials Chemistry A, 2017, 5, 9050-9059.	5.2	31
39	Synthesis, Crystal Structure, and Physical Properties of the Type-I Clathrate Ba_{8â^'Ï´}Ni_xâ–¡_ySi_{46â€“xâ€“y}. Inorganic Chemistry, 2012, 51, 4730-4741.	1.9	29
40	High temperature thermoelectric properties of the type-I clathrate Ba8AuxSi46â^'x. Journal of Applied Physics, 2012, 111, .	1.1	28
41	Thermoelectric properties of the Ca₅Al_{2â^'x}In_xSb₆solid solution. Dalton Transactions, 2014, 43, 15872-15878.	1.6	28
42	p-Type Co Interstitial Defects in Thermoelectric Skutterudite CoSb₃ Due to the Breakage of Sb₄-Rings. Chemistry of Materials, 2016, 28, 2172-2179.	3.2	28
43	Origins of ultralow thermal conductivity in 1-2-1-4 quaternary selenides. Journal of Materials Chemistry A, 2019, 7, 2589-2596.	5.2	28
44	High temperature thermoelectric properties of Zn-doped Eu₅In₂Sb₆. Journal of Materials Chemistry C, 2015, 3, 10518-10524.	2.7	27
45	Enhanced thermoelectric properties of the Zintl phase BaGa₂Sb₂via doping with Na or K. Journal of Materials Chemistry A, 2016, 4, 1867-1875.	5.2	26
46	Polycrystalline <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow><mml:mi>ZrTe</mml:mi></mml:mrow><mml:mrow><mml:mn>5</mml:mn></m Parametrized as a Narrow-Band-Gap Semiconductor for Thermoelectric Performance. Physical Review Applied, 2018, 9, .	1.5	26
47	Mechanical properties in thermoelectric oxides: Ideal strength, deformation mechanism, and fracture toughness. Acta Materialia, 2018, 149, 341-349.	3.8	25
48	Metal doped layered MgB2 nanoparticles as novel electrocatalysts for water splitting. Scientific Reports, 2021, 11, 3337.	1.6	25
49	Synthesis of the intermetallic clathrate Na₂Ba₆Si₄₆ by oxidation of Na₂BaSi₄ with HCl. Science and Technology of Advanced Materials, 2007, 8, 430-435.	2.8	24
50	Low-temperature magnetic, galvanomagnetic, and thermoelectric properties of the type-I clathrates Ba<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow /><mml:mrow><mml:mn>8</mml:mn></mml:mrow></mml:msub></mml:mrow></mml:math>Ni<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow /><mml:mrow><mml:mi>x</mml:mi></mml:mrow	1.1	23
51	Metal-substituted zirconium diboride (Zr1-TMB2; TMÂ=ÂNi, Co, and Fe) as low-cost and high-performance bifunctional electrocatalyst for water splitting. Electrochimica Acta, 2021, 389, 138789.	2.6	22
52	Enhanced thermoelectric properties of Sr5In2Sb6via Zn-doping. Journal of Materials Chemistry A, 2015, 3, 10289-10295.	5.2	21
53	Cs4Ge9Â·en: A Novel Compound with [Ge9]4â^' Clusters â€“ Synthesis, Crystal Structure and Vibrational Spectra. Zeitschrift Fur Anorganische Und Allgemeine Chemie, 2007, 633, 1575-1580.	0.6	20
54	First-principles calculations and experimental studies of XYZ₂ thermoelectric compounds: detailed analysis of van der Waals interactions. Journal of Materials Chemistry A, 2018, 6, 19502-19519.	5.2	20

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55	Enhanced thermoelectric performance in Mg_{3+x}Sb_{1.5}Bi_{0.49}Te_{0.01}via engineering microstructure through melt-centrifugation. Journal of Materials Chemistry A, 2021, 9, 1733-1742.	5.2	20
56	Defect-Controlled Electronic Structure and Phase Stability in Thermoelectric Skutterudite CoSb₃. Chemistry of Materials, 2017, 29, 3999-4007.	3.2	17
57	Isotropic Zero Thermal Expansion and Local Vibrational Dynamics in (Sc,Fe)F₃. Inorganic Chemistry, 2017, 56, 10840-10843.	1.9	16
58	Thermoelectric Properties of the ClathrateÂI Ba8Ge43â–¡3. Journal of Electronic Materials, 2010, 39, 2039-2042.	1.0	14
59	Effect of Polymer Topology on Microstructure, Segmental Dynamics, and Ionic Conductivity in PEO/PMMA-Based Solid Polymer Electrolytes. ACS Applied Polymer Materials, 2022, 4, 179-190.	2.0	14
60	Electronic structure and thermoelectric properties of pnictogen-substituted ASn1.5Te1.5 (Aâ€‰=â€‰Co, Rh, Ir) skutterudites. Journal of Applied Physics, 2015, 118, .	1.1	13
61	Structure and Failure Mechanism of the Thermoelectric CoSb₃/TiCoSb Interface. ACS Applied Materials & Interfaces, 2016, 8, 31968-31977.	4.0	13
62	Transport properties of the clathrate BaGe5. Journal of Applied Physics, 2011, 110, 043715.	1.1	12
63	Mechanical properties of thermoelectric lanthanum telluride from quantum mechanics. Journal Physics D: Applied Physics, 2017, 50, 274002.	1.3	12
64	Quaternary Pavonites A_{1+x}Sn_{2â€“x}Bi_{5+x}S₁₀ (A⁺ = Li⁺, Na⁺): Site Occupancy Disorder Defines Electronic Structure. Inorganic Chemistry, 2018, 57, 2260-2268.	1.9	12
65	Microwave-Assisted Auto-Combustion Synthesis of Binary/Ternary Co_xNi_{1â^’x}Ferrite for Electrochemical Hydrogen and Oxygen Evolution. ACS Omega, 2021, 6, 33024-33032.	1.6	11
66	Tailoring the Morphology of Cost-Effective Vanadium Diboride Through Cobalt Substitution for Highly Efficient Alkaline Water Oxidation. Inorganic Chemistry, 2021, 60, 19457-19466.	1.9	11
67	High temperature thermoelectric properties of the type-I clathrate Ba₈Ni_xGe_{46â^’xâ^’y}â–¡_y. Journal of Physics Condensed Matter, 2014, 26, 485801.	0.7	10
68	Electronic band structure and low-temperature transport properties of the type-I clathrate Ba₈Ni_xGe_{46â^’xâ^’y}â–¡_y. Dalton Transactions, 2015, 44, 7524-7537.	1.6	10
69	Syntheses, crystal structures, magnetic properties and vibrational spectra of nitridoborate-halide compounds Sr₂[BN₂]Br and Eu₂[BN₂]X(X= Br, I) with isolated [BN₂]^{3−}anions. Zeitschrift für Kristallographie, 2011, 226, 633-639.	1.1	9
70	Multiband conduction in the type-I clathrate Ba<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:msub><mml:mrow /><mml:mn>8</mml:mn></mml:msub></mml:math>Ge<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow />	1.1	9
71	Thermoelectric properties and electronic structure of the Zintl phase Sr₅In₂Sb₆and the Ca₅â^’xSr_xIn₂Sb₆solid solution. Journal of Physics Condensed Matter, 2015, 27, 015801.	0.7	9
72	Phase-Transition-Enhanced Thermoelectric Transport in Rickardite Mineral Cu_{3â€“x}Te₂. Chemistry of Materials, 2021, 33, 1832-1841.	3.2	9

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73	Physical Properties of Single-Crystalline Ba8Ni3.5Ge42.1â–¡0.4. Journal of Electronic Materials, 2010, 39, 1386-1389.	1.0	8
74	Crystal structure of tetrapotassium diarsenidozincate, K4ZnAs2. Zeitschrift Fur Kristallographie - New Crystal Structures, 2007, 222, 163-164.	0.1	6
75	BaGe6and BaGe6-x: Incommensurately Ordered Vacancies as Electron Traps. Inorganic Chemistry, 2014, 53, 12699-12705.	1.9	6
76	Inelastic neutron scattering study of the lattice dynamics in the clathrate compound BaGe₅. Journal of Physics Condensed Matter, 2015, 27, 485401.	0.7	6
77	Vibrational Spectra and Quantum Chemical Calculations of the Pure and Mixed Cluster Anions [SixGe4-x]4- and [GexSn4-x]4- (x = 0-4) in Compounds with Potassium and Cesium. Zeitschrift Fur Anorganische Und Allgemeine Chemie, 2011, 637, 907-914.	0.6	5
78	Intrinsic mechanical behavior of MgAgSb thermoelectric material: An ab initio study. Journal of Materiomics, 2020, 6, 24-32.	2.8	5
79	Vibrational dynamics of the type-I clathrates A8Sn44â–¡2 (Aâ€‰=â€‰Cs, Rb, K) from lattice-dynamics calculations, inelastic neutron scattering, and specific heat measurements. Journal of Applied Physics, 2020, 127, 145104.	1.1	5
80	Electrophoretic deposition and characterization of self-doped SrTiO3 thin films. Turkish Journal of Chemistry, 2021, 45, 323-332.	0.5	5
81	Evaluating electrocatalytic activity of metal-substituted hafnium diboride (Hf1-TMB2; TM = Ni and Co) toward water splitting. Journal of Alloys and Compounds, 2022, 905, 164148.	2.8	5
82	Vibrational Spectra of Cluster Anions. 2. Vibrational Spectra of Compounds with the Cluster Anions [E4]4â": M4E4 (M = K, Rb, Cs; E = Ge, Sn) and Î²-Na4Sn4. Zeitschrift Fur Anorganische Und Allgemeine Chemie, 2006, 632, 1281-1286.	0.6	4
83	Ca3[BN2]I3: The First Halide-Rich Alkaline Earth NitridoÂborate with Isolated [BN2]3-Units. Zeitschrift Fur Anorganische Und Allgemeine Chemie, 2015, 641, 2014-2019.	0.6	4
84	Themed issue on the chemistry of thermoelectric materials. Journal of Materials Chemistry C, 2015, 3, 10332-10335.	2.7	4
85	High temperature transport properties of BaZn2Sn2. Journal of Alloys and Compounds, 2015, 622, 402-407.	2.8	4
86	A novel europium (III) nitridoborate Eu3[B3N6]: Synthesis, crystal structure, magnetic properties, and Raman spectra. Journal of Solid State Chemistry, 2016, 239, 75-83.	1.4	4
87	High Temperature Electronic and Thermal Transport Properties of EuGa2â"x In x Sb2. Journal of Electronic Materials, 2017, 46, 4798-4804.	1.0	4
88	Stress/pressure-stabilized cubic polymorph of Li₃Sb with improved thermoelectric performance. Journal of Materials Chemistry A, 2021, 9, 25024-25031.	5.2	4
89	Synthesis, crystal structure and magnetic properties of Li0.44Eu3[B3N6]. Journal of Solid State Chemistry, 2014, 210, 96-101.	1.4	2
90	Blue TiO2 nanotube arrays as semimetallic materials with enhanced photoelectrochemical activity towards water splitting. Turkish Journal of Chemistry, 2020, 44, 1642-1654.	0.5	1

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91	TEM and SEM Investigation on Oxidised Ge-based Clathrates. Microscopy and Microanalysis, 2008, 14, 1142-1143.	0.2	0