Joseph P Heremans

List of Publications by Citations

213 papers	16,288 citations	55 h-index	125 g-index
229 ext. papers	18,048 ext. citations	7.1 avg, IF	6.73 L-index

#	Paper	IF	Citations
213	Enhancement of thermoelectric efficiency in PbTe by distortion of the electronic density of states. *Science*, **2008**, 321, 554-7	33.3	2900
212	Compromise and Synergy in High-Efficiency Thermoelectric Materials. *Advanced Materials*, **2017**, 29, 1605884	24	742
211	Intrinsically minimal thermal conductivity in cubic I-V-VI2 semiconductors. *Physical Review Letters*, **2008**, 101, 035901	7.4	645
210	Resonant levels in bulk thermoelectric semiconductors. *Energy and Environmental Science*, **2012**, 5, 5510-5530	35.4	624
209	Observation of the spin-Seebeck effect in a ferromagnetic semiconductor. *Nature Materials*, **2010**, 9, 898-903	27	583
208	Thermopower enhancement in lead telluride nanostructures. *Physical Review B*, **2004**, 70,	3.3	479
207	Interface-Induced Phenomena in Magnetism. *Reviews of Modern Physics*, **2017**, 89,	40.5	475
206	When thermoelectrics reached the nanoscale. *Nature Nanotechnology*, **2013**, 8, 471-3	28.7	450
205	Quantum transport in a multiwalled carbon nanotube. *Physical Review Letters*, **1996**, 76, 479-482	7.4	441
204	Estimation of the isotope effect on the lattice thermal conductivity of group IV and group III-V semiconductors. *Physical Review B*, **2002**, 66,	3.3	425
203	Lone pair electrons minimize lattice thermal conductivity. *Energy and Environmental Science*, **2013**, 6, 570-578	35.4	397
202	Thermopower enhancement in PbTe with Pb precipitates. *Journal of Applied Physics*, **2005**, 98, 063703	2.5	295
201	Bismuth nanowire arrays: Synthesis and galvanomagnetic properties. *Physical Review B*, **2000**, 61, 2921-2930	3.3	293
200	High performance Na-doped PbTe-PbS thermoelectric materials: electronic density of states modification and shape-controlled nanostructures. *Journal of the American Chemical Society*, **2011**, 133, 16588-97	16.4	289
199	Spin caloritronics. *Energy and Environmental Science*, **2014**, 7, 885	35.4	285
198	Electronic transport properties of single-crystal bismuth nanowire arrays. *Physical Review B*, **2000**, 61, 4850-4861	3.3	244
197	Thermoelectric power of bismuth nanocomposites. *Physical Review Letters*, **2002**, 88, 216801	7.4	232

196	Demonstration of high mobility and quantum transport in modulation-doped Ε(AlxGa1-x)2O3/Ga2O3 heterostructures. *Applied Physics Letters*, **2018**, 112, 173502	3.4	192
195	Solid state magnetic field sensors and applications. *Journal Physics D: Applied Physics*, **1993**, 26, 1149-1168	3	187
194	Thermoelectric power of bismuth nanowires. *Physical Review B*, **1999**, 59, 12579-12583	3.3	185
193	Transport properties of Bi nanowire arrays. *Applied Physics Letters*, **2000**, 76, 3944-3946	3.4	161
192	Resonant level formed by tin in Bi2Te3 and the enhancement of room-temperature thermoelectric power. *Physical Review B*, **2009**, 80,	3.3	157
191	Spin-seebeck effect: a phonon driven spin distribution. *Physical Review Letters*, **2011**, 106, 186601	7.4	148
190	Magnetotransport investigations of ultrafine single-crystalline bismuth nanowire arrays. *Applied Physics Letters*, **1998**, 73, 1589-1591	3.4	146
189	Giant spin Seebeck effect in a non-magnetic material. *Nature*, **2012**, 487, 210-3	50.4	143
188	Electrical resistance of a carbon nanotube bundle. *Journal of Materials Research*, **1994**, 9, 927-932	2.5	143
187	Magnetic susceptibility of carbon structures. *Physical Review B*, **1994**, 49, 15122-15125	3.3	142
186	Tetradymites as thermoelectrics and topological insulators. *Nature Reviews Materials*, **2017**, 2,	73.3	128
185	Magnetoresistance of bismuth nanowire arrays: A possible transition from one-dimensional to three-dimensional localization. *Physical Review B*, **1998**, 58, R10091-R10095	3.3	125
184	Scanning tunneling spectroscopy of carbon nanotubes. *Journal of Materials Research*, **1994**, 9, 259-262	2.5	110
183	Growth and characterization of epitaxial bismuth films. *Physical Review B*, **1988**, 38, 3818-3824	3.3	109
182	Magnon thermal mean free path in yttrium iron garnet. *Physical Review B*, **2014**, 90,	3.3	108
181	Combining alloy scattering of phonons and resonant electronic levels to reach a high thermoelectric figure of merit in PbTeSe and PbTeS alloys. *Energy and Environmental Science*, **2011**, 4, 4155	35.4	107
180	Measurements of the energy band gap and valence band structure of AgSbTe2. *Physical Review B*, **2008**, 77,	3.3	100
179	Relaxation time of the order parameter in a high-temperature superconductor. *Physical Review Letters*, **1990**, 65, 3445-3448	7.4	100

178	Thermal conductivity of superconductive Y-Ba-Cu-O. *Physical Review B*, **1987**, 36, 3917-3919	3.3	99
177	Thermal conductivity and Raman spectra of carbon fibers. *Physical Review B*, **1985**, 32, 6742-6747	3.3	98
176	Electronic properties of carbon nanotubes: Experimental results. *Carbon*, **1995**, 33, 941-948	10.4	95
175	Effect of the magnon dispersion on the longitudinal spin Seebeck effect in yttrium iron garnets. *Physical Review B*, **2015**, 92,	3.3	93
174	Epitaxial growth of aluminum nitride on Si(111) by reactive sputtering. *Applied Physics Letters*, **1991**, 59, 2097-2099	3.4	92
173	Thermal conductivity of germanium, silicon, and carbon nitrides. *Applied Physics Letters*, **2002**, 81, 5126-5128	3.4	88
172	Thermal conductivity and thermopower of vapor-grown graphite fibers. *Physical Review B*, **1985**, 32, 1981-1986	3.3	82
171	Transport properties of bismuth in quantizing magnetic fields. *Physical Review B*, **1976**, 14, 4381-4385	3.3	78
170	Thermal and electronic properties of rare-earth Ba2Cu3Ox superconductors. *Physical Review B*, **1988**, 37, 1604-1610	3.3	76
169	Observation of metallic conductivity in liquid carbon. *Physical Review Letters*, **1988**, 60, 452-455	7.4	74
168	Magnon-drag thermopower and Nernst coefficient in Fe, Co, and Ni. *Physical Review B*, **2016**, 94,	3.3	71
167	Thermoelectricity: The ugly duckling. *Nature*, **2014**, 508, 327-8	50.4	69
166	Valence-band structure of highly efficient p-type thermoelectric PbTe-PbS alloys. *Physical Review B*, **2013**, 87,	3.3	69
165	Resistance, magnetoresistance, and thermopower of zinc nanowire composites. *Physical Review Letters*, **2003**, 91, 076804	7.4	66
164	Influence of non-parabolicity on intravalley electron-phonon scattering; the case of bismuth. *Journal of Physics C: Solid State Physics*, **1979**, 12, 3483-3496		66
163	SnTe–AgSbTe2 Thermoelectric Alloys. *Advanced Energy Materials*, **2012**, 2, 58-62	21.8	65
162	Narrow-gap semiconductor magnetic-field sensors and applications. *Semiconductor Science and Technology*, **1993**, 8, S424-S430	1.8	60
161	Spin Seebeck effect through antiferromagnetic NiO. *Physical Review B*, **2016**, 94,	3.3	59

160	Low temperature thermal, thermoelectric, and thermomagnetic transport in indium rich Pb1−xSnxTe alloys. *Journal of Applied Physics*, **2008**, 103, 053710	2.5	57
159	Electronic and lattice contributions to the thermal conductivity of graphite intercalation compounds. *Physical Review B*, **1983**, 27, 1333-1347	3.3	55
158	High-temperature oxidation behavior of thermoelectric SnSe. *Journal of Alloys and Compounds*, **2016**, 669, 224-231	5.7	52
157	Antimony as an amphoteric dopant in lead telluride. *Physical Review B*, **2009**, 80,	3.3	51
156	Titanium forms a resonant level in the conduction band of PbTe. *Physical Review B*, **2011**, 84,	3.3	50
155	Electrical conductivity of vapor-grown carbon fibers. *Carbon*, **1985**, 23, 431-436	10.4	50
154	Chromium as resonant donor impurity in PbTe. *Physical Review B*, **2012**, 85,	3.3	49
153	Evolution of structural and electronic properties of highly mismatched InSb films. *Journal of Applied Physics*, **2000**, 88, 6276-6286	2.5	48
152	Dirac dispersion generates unusually large Nernst effect in Weyl semimetals. *Physical Review B*, **2018**, 97,	3.3	47
151	Paramagnon drag in high thermoelectric figure of merit Li-doped MnTe. *Science Advances*, **2019**, 5, eaat9461	14.3	42
150	Evidence for the role of the magnon energy relaxation length in the spin Seebeck effect. *Physical Review B*, **2018**, 97,	3.3	42
149	Mean free path limitation of thermoelectric properties of bismuth nanowire. *Journal of Applied Physics*, **2009**, 105, 113706	2.5	42
148	Thermal spin transport and energy conversion. *Materials Today Physics*, **2017**, 1, 39-49	8	40
147	Doping Effects on the Thermoelectric Properties of AgSbTe2. *Journal of Electronic Materials*, **2009**, 38, 1504-1509	1.9	40
146	Phonon-induced diamagnetic force and its effect on the lattice thermal conductivity. *Nature Materials*, **2015**, 14, 601-6	27	39
145	Magnetostriction of bismuth in quantizing magnetic fields. *Physical Review B*, **1982**, 26, 2552-2559	3.3	38
144	Magnetic properties of EuTe-PbTe superlattices. *Physical Review B*, **1988**, 37, 6311-6314	3.3	37
143	Transport and magnetic properties of dilute rare-earth PbSe alloys. *Journal of Applied Physics*, **2007**, 102, 043707	2.5	35

142	Anisotropic heat conduction in diacetylenes. *Physical Review Letters*, **1986**, 57, 869-872	7.4	35
141	Thermoelectric properties of bismuth nanowires in a quartz template. *Applied Physics Letters*, **2009**, 94, 192104	3.4	34
140	Effects of buffer layers on the structural and electronic properties of InSb films. *Journal of Applied Physics*, **2005**, 97, 043713	2.5	34
139	Linear geometrical magnetoresistance effect: Influence of geometry and material composition. *Physical Review B*, **1999**, 59, 13927-13942	3.3	34
138	Geometrical magnetothermopower in semiconductors. *Physical Review Letters*, **2001**, 86, 2098-101	7.4	33
137	Transport properties and valence band feature of high-performance (GeTe)85(AgSbTe2)15thermoelectric materials. *New Journal of Physics*, **2014**, 16, 013057	2.9	32
136	Magnetic properties of Pb1-xEuxTe grown by molecular-beam epitaxy. *Physical Review B*, **1987**, 35, 1969-1972	3.3	32
135	Optical and electronic properties of nitrogen-implanted diamond-like carbon films. *Journal of Materials Research*, **1994**, 9, 85-90	2.5	31
134	Galvanomagnetic properties of single-crystal bismuth-antimony thin films. *Semiconductor Science and Technology*, **1990**, 5, S257-S259	1.8	31
133	Phonon-electron scattering in single crystal silicon carbide. *Applied Physics Letters*, **1993**, 63, 3143-3145	3.4	30
132	Anisotropic thermal conductivity of superconducting lanthanum cuprate. *Physical Review B*, **1990**, 41, 2520-2523	3.3	30
131	The Fermi surface geometrical origin of axis-dependent conduction polarity in layered materials. *Nature Materials*, **2019**, 18, 568-572	27	28
130	Observation of spin Seebeck contribution to the transverse thermopower in Ni-Pt and MnBi-Au bulk nanocomposites. *Nature Communications*, **2016**, 7, 13714	17.4	27
129	Thermal properties of single-crystal La2CuO4- Delta. *Physical Review B*, **1989**, 39, 804-807	3.3	26
128	Electronic structure and thermoelectric properties of p-type Ag-doped Mg2Sn and Mg2Sn1-xSix (x = 0.05, 0.1). *Journal of Applied Physics*, **2014**, 116, 153706	2.5	25
127	Thermoelectric properties of a dilute graphite donor intercalation compound. *Physics Letters, Section A: General, Atomic and Solid State Physics*, **1981**, 84, 387-389	2.3	25
126	Thermopower and thermal conductivity in the Weyl semimetal NbP. *Journal of Physics Condensed Matter*, **2017**, 29, 325701	1.8	24
125	Thermoelectric transport properties of the n-type impurity Al in PbTe. *Physical Review B*, **2012**, 85,	3.3	24

124	Temperature dependence of C-axis electrical resistivity and thermopower of graphite intercalation compounds. *Solid State Communications*, **1982**, 44, 449-451	1.6	24
123	P-type doping of elemental bismuth with indium, gallium and tin: a novel doping mechanism in solids. *Energy and Environmental Science*, **2015**, 8, 2027-2040	35.4	23
122	Experimental study of the thermoelectric power factor enhancement in composites. *Applied Physics Letters*, **2008**, 93, 122107	3.4	23
121	Temperature dependence of excess carrier density and thermopower in tin-doped bismuth. Pseudo-parabolic model. *Journal of Physics C: Solid State Physics*, **1983**, 16, 4623-4636		22
120	Electron scattering in compensated bismuth. *Physical Review B*, **1976**, 14, 5156-5160	3.3	22
119	Growth of high mobility InSb by metalorganic chemical vapor deposition. *Journal of Electronic Materials*, **1994**, 23, 75-79	1.9	21
118	Scalable Nernst thermoelectric power using a coiled galfenol wire. *AIP Advances*, **2017**, 7, 095017	1.5	20
117	Magnetic and thermal properties of iron-doped lead telluride. *Physical Review B*, **2003**, 67,	3.3	20
116	Scanning tunneling microscopy of a stage-1 CuCl2 graphite intercalation compound. *Physical Review B*, **1990**, 42, 7524-7529	3.3	20
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114	Low-temperature heat capacity of magnetic graphite intercalation compounds. *Physical Review B*, **1983**, 28, 4799-4809	3.3	20
113	Electrical and thermal transport properties of arsenic. *Journal of Physics C: Solid State Physics*, **1977**, 10, 4511-4522		20
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111	Influence of substituting Sn for Sb on the thermoelectric transport properties of CoSb3-based skutterudites. *Journal of Applied Physics*, **2014**, 115, 103704	2.5	18
110	On the enhancement of the figure of merit in bulk nanocomposites. *Physica Status Solidi - Rapid Research Letters*, **2007**, 1, 256-258	2.5	17
109	Cyclotron resonance in epitaxial Bi1-xSbx films grown by molecular-beam epitaxy. *Physical Review B* , **1993**, 48, 11329-11335	3.3	17
108	Two-dimensional electron gas magnetic field sensors. *Applied Physics Letters*, **1990**, 57, 291-293	3.4	17
107	Electronic inhomogeneity in n- and p-type PbTe detected by 125Te NMR. *Physical Review B*, **2013**, 88,	3.3	16

106	Enhancement in the figure of merit of p-type Bi100−xSbx alloys through multiple valence-band doping. *Applied Physics Letters*, **2012**, 101, 053904	3.4	16
105	Magnetic Field Sensors for Magnetic Position Sensing in Automotive Applications. *Materials Research Society Symposia Proceedings*, **1997**, 475, 63		16
104	Growth and characterization of indium arsenide thin films. *Journal of Electronic Materials*, **1991**, 20, 1109-1115	1.9	16
103	Side optical cavity, single quantum well diode laser. *Superlattices and Microstructures*, **1986**, 2, 459-464	2.8	16
102	Cyclotron-resonance determination of band offset in a PbTe quantum well. *Physical Review B*, **1987**, 35, 2521-2523	3.3	16
101	Ordering and stability of Pb1−xEuxTe alloys. *Journal of Applied Physics*, **1988**, 63, 1504-1508	2.5	16
100	Active Peltier Coolers Based on Correlated and Magnon-Drag Metals. *Physical Review Applied*, **2019**, 11,	4.3	15
99	Research Update: Utilizing magnetization dynamics in solid-state thermal energy conversion. *APL Materials*, **2016**, 4, 104502	5.7	15
98	Quantum transport, anomalous dephasing, and spin-orbit coupling in an open ballistic bismuth nanocavity. *Physical Review B*, **2003**, 67,	3.3	15
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95	High-magnetic-field thermal-conductivity measurements in graphite intercalation compounds. *Physical Review B*, **1982**, 26, 3338-3346	3.3	15
94	Growth and characterization of indium antimonide doped with lead telluride. *Journal of Applied Physics*, **1992**, 71, 2328-2332	2.5	14
93	Nonlinear optical properties of molecular beam epitaxy grown Bi1−xSbx. *Applied Physics Letters*, **1990**, 57, 336-338	3.4	14
92	Galvanomagnetic properties of lead-telluride quantum wells. *Applied Physics Letters*, **1986**, 48, 928-930	3.4	14
91	Thermoelectric transport in indium and aluminum-doped lead selenide. *Journal of Applied Physics*, **2014**, 115, 053704	2.5	13
90	Electrical measurements on submicronic synthetic conductors: carbon nanotubes. *Synthetic Metals*, **1995**, 70, 1393-1396	3.6	13
89	A 2D metal-nonmetal transition in potassium-ammonia liquid monolayers in graphite. *Solid State Communications*, **1987**, 64, 443-446	1.6	13

88	High switching ratio variable-temperature solid-state thermal switch based on thermoelectric effects. *International Journal of Heat and Mass Transfer*, **2019**, 134, 114-118	4.9	13
87	Confinement effects, surface effects, and transport in Bi and Bi Sb semiconducting and semimetallic nanowires. *Journal of Physics Condensed Matter*, **2018**, 30, 403001	1.8	12
86	Enhanced thermoelectric power factor in Yb1ScxAl2 alloys using chemical pressure tuning of the Yb valence. *Journal of Applied Physics*, **2013**, 114, 223712	2.5	12
85	Geometrical magnetothermopower in n- and p-type InSb. *Physical Review B*, **2001**, 65,	3.3	12
84	Far-infrared investigation of band-structure parameters and exchange interaction in Pb1-xEuxTe films. *Physical Review B*, **1992**, 46, 13331-13338	3.3	12
83	Properties of tellurium-doped epitaxial bismuth films. *Physical Review B*, **1988**, 38, 10280-10284	3.3	12
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81	Magnetostriction and deformation potentials in graphite. *Journal of Physics C: Solid State Physics*, **1981**, 14, 3541-3546		12
80	Evidence for superconductive microsegregations in tin-doped bismuth. *Physical Review B*, **1979**, 19, 3476-3481	3.3	12
79	Experimental study of the valence band of Bi2Se3. *Physical Review B*, **2014**, 90,	3.3	11
78	Anomalies in the thermal conductivity and thermopower in CoCl2-intercalated graphite at the magnetic phase transition. *Physical Review B*, **1983**, 27, 2558-2561	3.3	11
77	Spin-Seebeck like signal in ferromagnetic bulk metallic glass without platinum contacts. *Solid State Communications*, **2014**, 198, 40-44	1.6	10
76	Negative magnetoresistance as a result of hopping conduction in polycrystalline thin films of beta -FeSi2. *Physical Review B*, **1995**, 52, 4643-4646	3.3	10
75	Transmission electron microscopy studies of bismuth films. *Journal of Materials Research*, **1990**, 5, 784-788	2.5	10
74	Longitudinal magnetostriction of bismuth above the last quantum limit. *Journal of Physics C: Solid State Physics*, **1981**, 14, L13-L16		10
73	Magnetoreflection studies of tin-doped bismuth. *Physical Review B*, **1982**, 25, 6155-6167	3.3	10
72	Fermi arc mediated entropy transport in topological semimetals. *Physical Review B*, **2018**, 97,	3.3	10
71	The influence of stoichiometry on the growth of tellurium-doped indium antimonide for magnetic field sensors. *Journal of Crystal Growth*, **1998**, 195, 378-384	1.6	9

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69	Magneto-optical determination of the T-point energy gap in bismuth. *Physical Review B*, **1993**, 48, 11439-11442	3.3	9
68	Thermal conductivity of single crystal lanthanum cuprates at very low temperature. *Solid State Communications*, **1991**, 77, 773-776	1.6	9
67	Magnetoresistance of graphite fibers. *Carbon*, **1986**, 24, 663-669	10.4	9
66	Magnetic-field dependence of PbTe-EuTe transistor characteristics. *Physical Review B*, **1988**, 38, 3549-3552	3.3	9
65	Basal-plane thermal conductivity of nanocrystalline and amorphized thin germanane. *Applied Physics Letters*, **2016**, 109, 131907	3.4	9
64	Chapter 2 Tetradymites **2016**, 39-94		8
63	Off-stoichiometric silver antimony telluride: An experimental study of transport properties with intrinsic and extrinsic doping. *AIP Advances*, **2015**, 5, 053602	1.5	8
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61	Eesley et al. reply. *Physical Review Letters*, **1991**, 67, 1054	7.4	8
60	Thermal chiral anomaly in the magnetic-field-induced ideal Weyl phase of BiSb. *Nature Materials*, **2021**, 20, 1525-1531	27	8
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58	Lithium as an Interstitial Donor in Bismuth and Bismuth–Antimony Alloys. *Journal of Electronic Materials*, **2012**, 41, 1648-1652	1.9	7
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50	alon enhancement of nonlinear optical response in Bi1Sbx. *Applied Physics Letters*, **1991**, 59, 756-758	3.4	6
49	Electrical transport and optical properties of zirconium nitride/aluminum nitride multilayers. *Journal of Applied Physics*, **1991**, 69, 846-849	2.5	6
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47	Galvanomagnetic properties at 4.2K of bismuth irradiated with fast electrons. *Journal of Physics F: Metal Physics*, **1984**, 14, 399-408		6
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41	Large magnon-induced anomalous Nernst conductivity in single-crystal MnBi. *Joule*, **2021**, 5, 3057-3067	27.8	6
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39	An investigation of the multicarrier transport properties of -doped InSb at high temperatures using a mobility spectrum technique. *Semiconductor Science and Technology*, **1996**, 11, 1857-1862	1.8	5
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37	Thermal conductivity of single-crystal barium fluoride. *Journal of Applied Physics*, **1988**, 63, 573-574	2.5	5
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34	BiSb and spin-related thermoelectric phenomena **2016**,		5
33	Thermoelectric and spin-caloritronic coolers: from basics to recent developments **2016**,		4
32	Growth of tin-doped indium antimonide for magnetoresistors. *Journal of Electronic Materials*, **1997**, 26, 1237-1243	1.9	4
31	Thermoelectric power, electrical and thermal resistance, and magnetoresistance of nanowire composites. *Materials Research Society Symposia Proceedings*, **2003**, 793, 94		4
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22	A simple relation between transverse magnetoresistance and Hall effect in bismuth lightly doped with tin. *Solid State Communications*, **1982**, 42, 705-708	1.6	3
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