

Wenzhuo Wu

List of Publications by Year in descending order

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136
papers

15,771
citations

25034
57
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20358
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140
all docs

140
docs citations

140
times ranked

15828
citing authors

#	ARTICLE	IF	CITATIONS
1	Piezoelectricity of single-atomic-layer MoS ₂ for energy conversion and piezotronics. <i>Nature</i> , 2014, 514, 470-474.	27.8	1,762
2	Transparent Triboelectric Nanogenerators and Self-Powered Pressure Sensors Based on Micropatterned Plastic Films. <i>Nano Letters</i> , 2012, 12, 3109-3114.	9.1	1,676
3	Nanotechnology-Enabled Energy Harvesting for Self-Powered Micro-/Nanosystems. <i>Angewandte Chemie - International Edition</i> , 2012, 51, 11700-11721.	13.8	910
4	Taxel-Addressable Matrix of Vertical-Nanowire Piezotronic Transistors for Active and Adaptive Tactile Imaging. <i>Science</i> , 2013, 340, 952-957.	12.6	817
5	Hydrogenated ZnO Core-Shell Nanocables for Flexible Supercapacitors and Self-Powered Systems. <i>ACS Nano</i> , 2013, 7, 2617-2626.	14.6	781
6	Field-effect transistors made from solution-grown two-dimensional tellurene. <i>Nature Electronics</i> , 2018, 1, 228-236.	26.0	591
7	Triboelectric Active Sensor Array for Self-Powered Static and Dynamic Pressure Detection and Tactile Imaging. <i>ACS Nano</i> , 2013, 7, 8266-8274.	14.6	529
8	Piezotronics and piezo-phototronics for adaptive electronics and optoelectronics. <i>Nature Reviews Materials</i> , 2016, 1, .	48.7	438
9	A ferroelectric semiconductor field-effect transistor. <i>Nature Electronics</i> , 2019, 2, 580-586.	26.0	317
10	One-Dimensional van der Waals Material Tellurium: Raman Spectroscopy under Strain and Magneto-Transport. <i>Nano Letters</i> , 2017, 17, 3965-3973.	9.1	272
11	Stable mid-infrared polarization imaging based on quasi-2D tellurium at room temperature. <i>Nature Communications</i> , 2020, 11, 2308.	12.8	259
12	Piezotronics and piezo-phototronics: fundamentals and applications. <i>National Science Review</i> , 2014, 1, 62-90.	9.5	231
13	Silicon-based hybrid cell for harvesting solar energy and raindrop electrostatic energy. <i>Nano Energy</i> , 2014, 9, 291-300.	16.0	225
14	Dual-Mode Triboelectric Nanogenerator for Harvesting Water Energy and as a Self-Powered Ethanol Nanosensor. <i>ACS Nano</i> , 2014, 8, 6440-6448.	14.6	222
15	Tellurene: its physical properties, scalable nanomanufacturing, and device applications. <i>Chemical Society Reviews</i> , 2018, 47, 7203-7212.	38.1	214
16	Triboelectric Nanogenerator Built on Suspended 3D Spiral Structure as Vibration and Positioning Sensor and Wave Energy Harvester. <i>ACS Nano</i> , 2013, 7, 10424-10432.	14.6	204
17	Strain-Gated Piezotronic Logic Nanodevices. <i>Advanced Materials</i> , 2010, 22, 4711-4715.	21.0	196
18	Controlled Growth of a Large-Size 2D Selenium Nanosheet and Its Electronic and Optoelectronic Applications. <i>ACS Nano</i> , 2017, 11, 10222-10229.	14.6	189

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19	Piezophototronic Effect in Single-Atomic-Layer MoS ₂ for Strain-Gated Flexible Optoelectronics. <i>Advanced Materials</i> , 2016, 28, 8463-8468.	21.0	187
20	Ultrafast Response p-Si/n-ZnO Heterojunction Ultraviolet Detector Based on Pyro-Phototronic Effect. <i>Advanced Materials</i> , 2016, 28, 6880-6886.	21.0	176
21	Wafer-Scale High-Throughput Ordered Growth of Vertically Aligned ZnO Nanowire Arrays. <i>Nano Letters</i> , 2010, 10, 3414-3419.	9.1	175
22	Engineered and Laser-Processed Chitosan Biopolymers for Sustainable and Biodegradable Triboelectric Power Generation. <i>Advanced Materials</i> , 2018, 30, 1706267.	21.0	172
23	Emerging beyond-graphene elemental 2D materials for energy and catalysis applications. <i>Chemical Society Reviews</i> , 2021, 50, 10983-11031.	38.1	170
24	Triboelectrification Based Motion Sensor for Human-Machine Interfacing. <i>ACS Applied Materials & Interfaces</i> , 2014, 6, 7479-7484.	8.0	162
25	Self-Powered Trajectory, Velocity, and Acceleration Tracking of a Moving Object/Body using a Triboelectric Sensor. <i>Advanced Functional Materials</i> , 2014, 24, 7488-7494.	14.9	161
26	Piezotronic Nanowire-Based Resistive Switches As Programmable Electromechanical Memories. <i>Nano Letters</i> , 2011, 11, 2779-2785.	9.1	141
27	Piezotronics and piezo-phototronics – From single nanodevices to array of devices and then to integrated functional system. <i>Nano Today</i> , 2013, 8, 619-642.	11.9	141
28	Raman response and transport properties of tellurium atomic chains encapsulated in nanotubes. <i>Nature Electronics</i> , 2020, 3, 141-147.	26.0	126
29	Solution-Derived ZnO Homojunction Nanowire Films on Wearable Substrates for Energy Conversion and Self-Powered Gesture Recognition. <i>Nano Letters</i> , 2014, 14, 6897-6905.	9.1	123
30	Piezotronics and piezo-phototronics with third-generation semiconductors. <i>MRS Bulletin</i> , 2018, 43, 922-927.	3.5	121
31	Optimizing Performance of Silicon-Based p-n Junction Photodetectors by the Piezo-Phototronic Effect. <i>ACS Nano</i> , 2014, 8, 12866-12873.	14.6	120
32	Piezotronic Effect in Solution-Grown p-Type ZnO Nanowires and Films. <i>Nano Letters</i> , 2013, 13, 2647-2653.	9.1	118
33	A self-powered electrochromic device driven by a nanogenerator. <i>Energy and Environmental Science</i> , 2012, 5, 9462.	30.8	117
34	Piezotronic Effect in Flexible Thin-Film Based Devices. <i>Advanced Materials</i> , 2013, 25, 3371-3379.	21.0	115
35	Hybridizing Triboelectrification and Electromagnetic Induction Effects for High-Efficient Mechanical Energy Harvesting. <i>ACS Nano</i> , 2014, 8, 7442-7450.	14.6	112
36	Polar Charges Induced Electric Hysteresis of ZnO Nano/Microwire for Fast Data Storage. <i>Nano Letters</i> , 2011, 11, 2829-2834.	9.1	102

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37	Tellurium: Fast Electrical and Atomic Transport along the Weak Interaction Direction. Journal of the American Chemical Society, 2018, 140, 550-553.	13.7	101
38	Tellurene Photodetector with High Gain and Wide Bandwidth. ACS Nano, 2020, 14, 303-310.	14.6	101
39	Controlled Growth of Aligned Polymer Nanowires. Journal of Physical Chemistry C, 2009, 113, 16571-16574.	3.1	100
40	Piezotronic Effect Modulated Heterojunction Electron Gas in AlGaIn/GaN Heterostructure Microwire. Advanced Materials, 2016, 28, 7234-7242.	21.0	100
41	Planar Waveguide~Nanowire Integrated Three-Dimensional Dye-Sensitized Solar Cells. Nano Letters, 2010, 10, 2092-2096.	9.1	99
42	Large~Area Direct Laser~Shock Imprinting of a 3D Biomimic Hierarchical Metal Surface for Triboelectric Nanogenerators. Advanced Materials, 2018, 30, 1705840.	21.0	93
43	Seedless synthesis of patterned ZnO nanowire arrays on metal thin films (Au, Ag, Cu, Sn) and their application for flexible electromechanical sensing. Journal of Materials Chemistry, 2012, 22, 9469.	6.7	84
44	Development and progress in piezotronics. Nano Energy, 2015, 14, 276-295.	16.0	84
45	GaN Nanobelt-Based Strain-Gated Piezotronic Logic Devices and Computation. ACS Nano, 2013, 7, 6403-6409.	14.6	82
46	Piezo~Phototronic Effect on Selective Electron or Hole Transport through Depletion Region of Vis~NIR Broadband Photodiode. Advanced Materials, 2017, 29, 1701412.	21.0	82
47	Thermoelectric Performance of 2D Tellurium with Accumulation Contacts. Nano Letters, 2019, 19, 1955-1962.	9.1	81
48	Self-powered triboelectric velocity sensor for dual-mode sensing of rectified linear and rotary motions. Nano Energy, 2014, 10, 305-312.	16.0	78
49	Nanogenerator as an active sensor for vortex capture and ambient wind-velocity detection. Energy and Environmental Science, 2012, 5, 8528.	30.8	77
50	Effective piezo-phototronic enhancement of solar cell performance by tuning material properties. Nano Energy, 2013, 2, 1093-1100.	16.0	71
51	Solution-synthesized chiral piezoelectric selenium nanowires for wearable self-powered human-integrated monitoring. Nano Energy, 2019, 56, 693-699.	16.0	71
52	Room-Temperature Electrocaloric Effect in Layered Ferroelectric CuInP ₂ S ₆ for Solid-State Refrigeration. ACS Nano, 2019, 13, 8760-8765.	14.6	69
53	Wafer-Scale High-Throughput Ordered Arrays of Si and Coaxial Si/Si _{1-x} Ge _x Wires: Fabrication, Characterization, and Photovoltaic Application. ACS Nano, 2011, 5, 6629-6636.	14.6	67
54	Holistically Engineered Polymer~Polymer and Polymer~Ion Interactions in Biocompatible Polyvinyl Alcohol Blends for High~Performance Triboelectric Devices in Self~Powered Wearable Cardiovascular Monitorings. Advanced Materials, 2020, 32, e2002878.	21.0	66

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55	Quantum Hall effect of Weyl fermions in n-type semiconducting tellurene. Nature Nanotechnology, 2020, 15, 585-591.	31.5	63
56	Lithium ion battery anodes using Si-Fe based nanocomposite structures. Nano Energy, 2016, 26, 37-42.	16.0	62
57	Temperature Dependence of the Piezotronic and Piezophototronic Effects in <i>a</i> -axis GaN Nanobelts. Advanced Materials, 2015, 27, 8067-8074.	21.0	60
58	Quantum Transport and Band Structure Evolution under High Magnetic Field in Few-Layer Tellurene. Nano Letters, 2018, 18, 5760-5767.	9.1	60
59	Tellurene: A Multifunctional Material for Midinfrared Optoelectronics. ACS Photonics, 2019, 6, 1632-1638.	6.6	60
60	An all-textile triboelectric sensor for wearable teleoperated human-machine interaction. Journal of Materials Chemistry A, 2019, 7, 26804-26811.	10.3	57
61	Lignin biopolymer based triboelectric nanogenerators. APL Materials, 2017, 5, .	5.1	54
62	Heteroepitaxial Patterned Growth of Vertically Aligned and Periodically Distributed ZnO Nanowires on GaN Using Laser Interference Ablation. Advanced Functional Materials, 2010, 20, 3484-3489.	14.9	51
63	Temperature Dependence of the Piezophototronic Effect in CdS Nanowires. Advanced Functional Materials, 2015, 25, 5277-5284.	14.9	50
64	Wearable high-dielectric-constant polymers with core-shell liquid metal inclusions for biomechanical energy harvesting and a self-powered user interface. Journal of Materials Chemistry A, 2019, 7, 7109-7117.	10.3	48
65	Chitosan biopolymer-derived self-powered triboelectric sensor with optimized performance through molecular surface engineering and data-driven learning. Information Materials, 2019, 1, 116-125.	17.3	47
66	Piezophototronic Boolean Logic and Computation Using Photon and Strain Dual-Gated Nanowire Transistors. Advanced Materials, 2015, 27, 940-947.	21.0	46
67	Scalable nanomanufacturing of inkjet-printed wearable energy storage devices. Journal of Materials Chemistry A, 2019, 7, 23280-23300.	10.3	44
68	Data-driven and probabilistic learning of the process-structure-property relationship in solution-grown tellurene for optimized nanomanufacturing of high-performance nanoelectronics. Nano Energy, 2019, 57, 480-491.	16.0	44
69	Piezotronic Effect in Strain-Gated Transistor of <i>a</i> -Axis GaN Nanobelt. ACS Nano, 2015, 9, 9822-9829.	14.6	43
70	Phase transition in two-dimensional tellurene under mechanical strain modulation. Nano Energy, 2019, 58, 202-210.	16.0	43
71	Optoelectronic Properties of Solution Grown ZnO n-p or p-n Core-Shell Nanowire Arrays. ACS Applied Materials & Interfaces, 2016, 8, 4287-4291.	8.0	42
72	Bio-Derived Natural Materials Based Triboelectric Devices for Self-Powered Ubiquitous Wearable and Implantable Intelligent Devices. Advanced Sustainable Systems, 2020, 4, 2000108.	5.3	42

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73	Inkjet-Printed Wearable Nanosystems for Self-Powered Technologies. Advanced Materials Interfaces, 2020, 7, 2000015.	3.7	41
74	Strain-Engineered Anisotropic Optical and Electrical Properties in 2D Chiral-Chain Tellurium. Advanced Materials, 2020, 32, e2002342.	21.0	40
75	Anisotropic thermal conductivity in 2D tellurium. 2D Materials, 2020, 7, 015008.	4.4	39
76	Ultrafast photoinduced band splitting and carrier dynamics in chiral tellurium nanosheets. Nature Communications, 2020, 11, 3991.	12.8	39
77	Design and engineering of <scp>high-performance</scp> triboelectric nanogenerator for ubiquitous unattended devices. EcoMat, 2021, 3, e12093.	11.9	39
78	Emerging Devices Based on Two-Dimensional Monolayer Materials for Energy Harvesting. Research, 2019, 2019, 7367828.	5.7	39
79	High-Performance Piezo-Electrocatalytic Sensing of Ascorbic Acid with Nanostructured Wurtzite Zinc Oxide. Advanced Materials, 2021, 33, e2105697.	21.0	38
80	Piezo-Phototronic Effect in 2D $\text{In}_2\text{Se}_3/\text{WSe}_2$ van der Waals Heterostructure for Photodetector with Enhanced Photoresponse. Advanced Optical Materials, 2021, 9, 2100864.	7.3	37
81	Integrated ZnO nanotube arrays as efficient dye-sensitized solar cells. Journal of Alloys and Compounds, 2012, 529, 163-168.	5.5	36
82	The resurrection of tellurium as an elemental two-dimensional semiconductor. Npj 2D Materials and Applications, 2022, 6, .	7.9	36
83	Hydrogel Ionotronics with Ultra-Low Impedance and High Signal Fidelity across Broad Frequency and Temperature Ranges. Advanced Functional Materials, 2022, 32, 2109506.	14.9	34
84	Clear Experimental Demonstration of Hole Gas Accumulation in Ge/Si Core-Shell Nanowires. ACS Nano, 2015, 9, 12182-12188.	14.6	33
85	Piezotronic effect in 1D van der Waals solid of elemental tellurium nanobelt for smart adaptive electronics. Semiconductor Science and Technology, 2017, 32, 104004.	2.0	32
86	Imaging Carrier Inhomogeneities in Ambipolar Tellurene Field Effect Transistors. Nano Letters, 2019, 19, 1289-1294.	9.1	31
87	Hybrid printing of wearable piezoelectric sensors. Nano Energy, 2021, 90, 106522.	16.0	31
88	Hybrid nanomanufacturing of mixed-dimensional manganese oxide/graphene aerogel macroporous hierarchy for ultralight efficient supercapacitor electrodes in self-powered ubiquitous nanosystems. Nano Energy, 2019, 66, 104124.	16.0	30
89	Gate-tunable strong spin-orbit interaction in two-dimensional tellurium probed by weak antilocalization. Physical Review B, 2020, 101, .	3.2	29
90	Multiwall carbon nanotube resonator for ultra-sensitive mass detection. Electronics Letters, 2008, 44, 1060.	1.0	25

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91	Solid-phase synthesis of atomically thin two-dimensional non-layered MoO ₂ nanosheets for surface enhanced Raman spectroscopy. Journal of Materials Chemistry C, 2019, 7, 7196-7200.	5.5	23
92	Robust optimization of the output voltage of nanogenerators by statistical design of experiments. Nano Research, 2010, 3, 613-619.	10.4	21
93	The impact of cathode surface roughness and multiple breakdown events on microscale gas breakdown at atmospheric pressure. Journal of Applied Physics, 2019, 125, 203302.	2.5	20
94	High-performance piezoelectric nanogenerators for self-powered nanosystems: quantitative standards and figures of merit. Nanotechnology, 2016, 27, 112503.	2.6	19
95	Ink-Based Additive Nanomanufacturing of Functional Materials for Human-Integrated Smart Wearables. Advanced Intelligent Systems, 2020, 2, 2000117.	6.1	17
96	Piezoelectric biaxial strain effects on the optical and photoluminescence spectra of 2D III-VI compound $\text{In}_{1-x}\text{Ga}_x\text{Sb}_2\text{Se}_3$ nanosheets. Applied Physics Letters, 2020, 116, .	3.3	17
97	Pyroelectric-field driven defects diffusion along c -axis in ZnO nanobelts under high-energy electron beam irradiation. Journal of Applied Physics, 2014, 116, .	2.5	16
98	High-Performance Few-Layer Tellurium CMOS Devices Enabled by Atomic Layer Deposited Dielectric Doping Technique. , 2018, , .		16
99	Scalable nanomanufacturing and assembly of chiral-chain piezoelectric tellurium nanowires for wearable self-powered cardiovascular monitoring. Nano Futures, 2019, 3, 011001.	2.2	16
100	Scalably Nanomanufactured Atomically Thin Materials-Based Wearable Health Sensors. Small Structures, 2022, 3, 2100120.	12.0	16
101	2D Materials for Wearable Energy Harvesting. Advanced Materials Technologies, 2022, 7, .	5.8	16
102	Infrared ultrafast spectroscopy of solution-grown thin film tellurium. Physical Review B, 2019, 100, .	3.2	13
103	Metabolomic insights of macrophage responses to graphene nanoplatelets: Role of scavenger receptor CD36. PLoS ONE, 2018, 13, e0207042.	2.5	12
104	The mechanism of controlled integration of ZnO nanowires using pulsed-laser-induced chemical deposition. Nanoscale, 2019, 11, 2617-2623.	5.6	12
105	Data-driven learning of process-property-performance relation in laser-induced aqueous manufacturing and integration of ZnO piezoelectric nanogenerator for self-powered nanosensors. Nano Energy, 2021, 83, 105820.	16.0	12
106	Self-electrochemiluminescence of CdTe nanocrystals capped with 2-diethylaminoethanethiol. Chemical Communications, 2017, 53, 5388-5391.	4.1	11
107	Dynamics of Electrically Driven Cholesteric Liquid Crystals by Triboelectrification and Their Application in Self-Powered Information Securing and Vision Correcting. ACS Energy Letters, 2021, 6, 3185-3194.	17.4	11
108	Laser-Based Fabrication of Carbon Nanotube-Silver Composites With Enhanced Fatigue Performance Onto a Flexible Substrate. Journal of Manufacturing Science and Engineering, Transactions of the ASME, 2018, 140, .	2.2	9

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109	Magnetically Aligned Ultrafine Cobalt Embedded 3D Porous Carbon Metamaterial by One-Step Ultrafast Laser Direct Writing. <i>Advanced Science</i> , 2021, 8, e2102477.	11.2	9
110	Enhancement of patterned triboelectric output performance by an interfacial polymer layer for energy harvesting application. <i>Nanoscale</i> , 2021, 13, 20615-20624.	5.6	9
111	Parallel Nanoimprint Forming of One-Dimensional Chiral Semiconductor for Strain-Engineered Optical Properties. <i>Nano-Micro Letters</i> , 2020, 12, 160.	27.0	8
112	Bilayer Quantum Hall States in an n-Type Wide Tellurium Quantum Well. <i>Nano Letters</i> , 2021, 21, 7527-7533.	9.1	6
113	Piezotronics for sensors and energy technology. <i>SPIE Newsroom</i> , 0, , .	0.1	4
114	Wafer-scale Material-device Correlation of Tellurene MOSFETs. , 2018, , .		2
115	Abnormal in-plane thermal conductivity anisotropy in bilayer $\hat{\pm}$ -phase tellurene. <i>International Journal of Heat and Mass Transfer</i> , 2022, 192, 122908.	4.8	2
116	Active Multiobject Exploration and Recognition via Tactile Whiskers. <i>IEEE Transactions on Robotics</i> , 2022, 38, 3479-3497.	10.3	2
117	Selenene and Tellurene. , 2022, , 197-224.		2
118	Large area laser interference patterning for periodic growth of individual ZnO nanowires. , 2010, , .		0
119	Flexible Triboelectric Nanogenerator for Energy Harvesting and Pressure Sensor. , 2013, , .		0
120	(Invited) Piezotronics in 1D/2D Nanomaterials for Active and Adaptive Nano-Electronics/Optoelectronics. <i>ECS Transactions</i> , 2015, 69, 33-39.	0.5	0
121	One-step fabrication of 2D circuits. <i>Nature Electronics</i> , 2019, 2, 142-143.	26.0	0
122	Hybrid Nanomanufacturing for Wearable Intelligence. <i>ECS Meeting Abstracts</i> , 2021, MA2021-01, 1131-1131.	0.0	0
123	Fatigue-Free Electrodes Enabled Joule Heating Device for Wearable Thermotherapy. <i>ECS Meeting Abstracts</i> , 2021, MA2021-01, 1130-1130.	0.0	0
124	(Invited) Large-Area Solution-Nanomanufactured Air-Stable 2D Material for High-Performance Electronics and Smart Sensors. <i>ECS Meeting Abstracts</i> , 2018, , .	0.0	0
125	(Invited) Hybrid Nanomanufacturing of Heterostructured Wearable Devices for Self-Powered User Interface. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0
126	(Invited) Scalably-Nanomanufactured 2-D Tellurene for Ubiquitous Electronics and Smart Sensors. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0

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127	(Invited) High-Performance 2D Tellurium Transistors Towards CMOS Logic Applications. ECS Meeting Abstracts, 2019, , .	0.0	0
128	(Invited) Scalably-Nanomanufactured Tellurene: An Emerging 2-D Multifunctional Material. ECS Meeting Abstracts, 2019, , .	0.0	0
129	(Invited) 2D Tellurene for Novel Electronics and Sensors. ECS Meeting Abstracts, 2020, MA2020-01, 1417-1417.	0.0	0
130	Microscopic origin of inhomogeneous transport in four-terminal tellurene devices. Applied Physics Letters, 2020, 117, .	3.3	0
131	Prefaceâ€”JSS Focus Issue on Solid-State Materials and Devices for Biological and Medical Applications. ECS Journal of Solid State Science and Technology, 2020, 9, 110001.	1.8	0
132	An Innovative Laser Metasurface Fabrication Technique for Highly Flexible Optoelectronic Devices. Journal of Micro and Nano-Manufacturing, 2020, 8, .	0.7	0
133	2D-material-enabled multifunctional mid-IR optoelectronics. , 2020, , .		0
134	High-Frequency Tellurene MOSFETs with Biased Contacts. , 2021, , .		0
135	(Invited) Hybrid Nanomanufacturing of Heterostructured Wearable Devices for Self-powered Smart Wearables. ECS Meeting Abstracts, 2020, MA2020-02, 3712-3712.	0.0	0
136	Abnormal In-Plane Thermal Conductivity Anisotropy in Bilayer Îŕ-Phase Tellurene. SSRN Electronic Journal, 0, , .	0.4	0