Emerging triboelectric nanogenerators for ocean wave and future perspectives

Energy and Environmental Science 13, 2657-2683 DOI: 10.1039/d0ee01258k

Citation Report

#	Article	IF	CITATIONS
1	Network Topology Optimization of Triboelectric Nanogenerators for Effectively Harvesting Ocean Wave Energy. IScience, 2020, 23, 101848.	1.9	29
2	Liquid-solid contact electrification based on discontinuous-conduction triboelectric nanogenerator induced by radially symmetrical structure. Nano Energy, 2021, 80, 105571.	8.2	36
3	Soft-contact cylindrical triboelectric-electromagnetic hybrid nanogenerator based on swing structure for ultra-low frequency water wave energy harvesting. Nano Energy, 2021, 81, 105625.	8.2	132
4	Energy Harvesting: A Panacea to the Epileptic Power Supply in Nigeria. Lecture Notes in Networks and Systems, 2021, , 127-136.	0.5	0
5	Superâ€Durable, Lowâ€Wear, and Highâ€Performance Furâ€Brush Triboelectric Nanogenerator for Wind and Water Energy Harvesting for Smart Agriculture. Advanced Energy Materials, 2021, 11, 2003066.	10.2	189
6	Hybrid Energy-Harvesting Systems Based on Triboelectric Nanogenerators. Matter, 2021, 4, 116-143.	5.0	94
7	Textile-Based Triboelectric Nanogenerators for Wearable Self-Powered Microsystems. Micromachines, 2021, 12, 158.	1.4	31
8	Product Design by Additive Manufacturing for Water Environments: Study of Degradation and Absorption Behavior of PLA and PETG. Polymers, 2021, 13, 1036.	2.0	33
9	Stackable triboelectric nanogenerators for self-powered marine monitoring buoy**. , 2021, , .		0
10	Spherical triboelectric nanogenerator based on spring-assisted swing structure for effective water wave energy harvesting. Nano Energy, 2021, 83, 105836.	8.2	94
11	Active resonance triboelectric nanogenerator for harvesting omnidirectional water-wave energy. Joule, 2021, 5, 1613-1623.	11.7	162
12	Triboelectric Laminates with Volumetric Electromechanical Response for Mechanical Energy Harvesting. Advanced Materials Technologies, 2021, 6, 2100163.	3.0	7
13	Sandwich-like triboelectric nanogenerators integrated self-powered buoy for navigation safety. Nano Energy, 2021, 84, 105920.	8.2	60
14	Recent Advances towards Ocean Energy Harvesting and Selfâ€Powered Applications Based on Triboelectric Nanogenerators. Advanced Electronic Materials, 2021, 7, 2100277.	2.6	58
15	Spherical Triboelectric Nanogenerator with Dense Point Contacts for Harvesting Multidirectional Water Wave and Vibration Energy. ACS Energy Letters, 2021, 6, 2809-2816.	8.8	48
16	Fully stretchable self-charging power unit with micro-supercapacitor and triboelectric nanogenerator based on oxidized single-walled carbon nanotube/polymer electrodes. Nano Energy, 2021, 86, 106083.	8.2	57
17	Piezoelectric Nanogenerator Based on Electrospun Cellulose Acetate/Nanocellulose Crystal Composite Membranes for Energy Harvesting Application. Chemical Research in Chinese Universities, 2022, 38, 1005-1011.	1.3	7
18	Scalable and washable 3D warp-knitted spacer power fabrics for energy harvesting and pressure sensing. Journal Physics D: Applied Physics, 2021, 54, 424006.	1.3	23

#	Article	IF	CITATIONS
19	Boosted output performance of nanocellulose-based triboelectric nanogenerators via device engineering and surface functionalization. Carbohydrate Polymers, 2021, 266, 118120.	5.1	14
20	High performance floating self-excited sliding triboelectric nanogenerator for micro mechanical energy harvesting. Nature Communications, 2021, 12, 4689.	5.8	186
21	Ultrathin ammonium vanadate nanoflakes on carbon fiber – A binder-free high-rate capability cathode for aqueous medium zinc ion storage. Journal of Alloys and Compounds, 2021, 876, 160130.	2.8	14
22	A bistable X-structured electromagnetic wave energy converter with a novel mechanical-motion-rectifier: Design, analysis, and experimental tests. Energy Conversion and Management, 2021, 244, 114466.	4.4	48
23	Influence of platform design and power take-off characteristics on the performance of the E-Motions wave energy converter. Energy Conversion and Management, 2021, 244, 114481.	4.4	16
24	Triboelectric Nanogenerator for Ocean Wave Graded Energy Harvesting and Condition Monitoring. ACS Nano, 2021, 15, 16368-16375.	7.3	64
25	Nitrogen-doped graphene based triboelectric nanogenerators. Nano Energy, 2021, 87, 106173.	8.2	30
26	Carbon nano thorn arrays based water/cold resisted nanogenerator for wind energy harvesting and speed sensing. Nano Energy, 2021, 90, 106571.	8.2	18
27	Mechanoluminescent hybrids from a natural resource for energyâ€related applications. InformaÄnÃ- Materiály, 2021, 3, 1272-1284.	8.5	53
28	Surface Engineering for Enhanced Triboelectric Nanogenerator. Nanoenergy Advances, 2021, 1, 58-80.	3.6	47
29	Water purification system based on self-powered ozone production. Nano Energy, 2021, 88, 106230.	8.2	17
30	Recent progress in blue energy harvesting for powering distributed sensors in ocean. Nano Energy, 2021, 88, 106199.	8.2	130
31	An electrostatic-electromagnetic hybrid generator with largely enhanced energy conversion efficiency. Nano Energy, 2021, 89, 106425.	8.2	10
32	Self-powered pumping switched TENG enabled real-time wireless metal tin height and position recognition and counting for production line management. Nano Energy, 2021, 90, 106544.	8.2	14
33	Enhanced performance of triboelectric nanogenerator based on polyamide-silver antimony sulfide nanofibers for energy harvesting. Renewable Energy, 2021, 179, 1781-1792.	4.3	31
34	Rationally segmented triboelectric nanogenerator with a constant direct-current output and low crest factor. Energy and Environmental Science, 0, , .	15.6	60
35	Self-charging power textiles integrating energy harvesting triboelectric nanogenerators with energy storage batteries/supercapacitors. Journal of Semiconductors, 2021, 42, 101601.	2.0	76
36	Nanomaterials with high solar reflectance as an emerging path towards energy-efficient envelope systems: a review. Journal of Materials Science, 2021, 56, 19791-19839.	1.7	18

#	Article	IF	CITATIONS
37	High-performance triboelectric nanogenerator based on carbon nanomaterials functionalized polyacrylonitrile nanofibers. Energy, 2022, 239, 122369.	4.5	27
38	Dual-wavelength luminescent fibers receiver for wide field-of-view, Gb/s underwater optical wireless communication. Optics Express, 2021, 29, 38014.	1.7	28
39	A new synergetic system based on triboelectric nanogenerator and corrosion inhibitor for enhanced anticorrosion performance. Nano Energy, 2022, 91, 106696.	8.2	41
40	Self-powered seesaw structured spherical buoys based on a hybrid triboelectric–electromagnetic nanogenerator for sea surface wireless positioning. Energy and Environmental Science, 2022, 15, 621-632.	15.6	47
41	Water wave vibration-promoted solar evaporation with super high productivity. Nano Energy, 2022, 92, 106745.	8.2	14
42	Characteristics of electric performance and key factors of a hybrid piezo/triboelectric generator for wave energy harvesting. Sustainable Energy Technologies and Assessments, 2022, 50, 101757.	1.7	5
43	Water electrification based triboelectric nanogenerator integrated harmonic oscillator for waste mechanical energy harvesting. Energy Conversion and Management, 2022, 251, 115014.	4.4	12
44	Blue Energy for Green Hydrogen Fuel: A Selfâ€Powered Electrochemical Conversion System Driven by Triboelectric Nanogenerators. Advanced Energy Materials, 2022, 12, .	10.2	52
45	Recent work and prospective analysis on offshore structures and marine energy harvesting at the Faculty of Engineering of the University of Porto. IOP Conference Series: Materials Science and Engineering, 2021, 1201, 012043.	0.3	0
46	Opportunities and Challenges in Triboelectric Nanogenerator (TENG) based Sustainable Energy Generation Technologies: A Mini-Review. Chemical Engineering Journal Advances, 2022, 9, 100237.	2.4	65
47	Control methods and applications of interface contact electrification of triboelectric nanogenerators: a review. Materials Research Letters, 2022, 10, 97-123.	4.1	26
48	Magnetic capsulate triboelectric nanogenerators. Scientific Reports, 2022, 12, 89.	1.6	21
49	Triboelectric Response of Electrospun Stratified PVDF and PA Structures. Nanomaterials, 2022, 12, 349.	1.9	26
50	High Space Efficiency Hybrid Nanogenerators for Effective Water Wave Energy Harvesting. Advanced Functional Materials, 2022, 32, .	7.8	45
51	All-polymer waterproof triboelectric nanogenerator towards blue energy harvesting and self-powered human motion detection. Energy, 2022, 247, 123422.	4.5	19
52	A Stackable Triboelectric Nanogenerator for Wave-Driven Marine Buoys. Nanomaterials, 2022, 12, 594.	1.9	15
53	p-type ZnO for photocatalytic water splitting. APL Materials, 2022, 10, .	2.2	14
54	Gyroscope-Structured Triboelectric Nanogenerator for Harvesting Multidirectional Ocean Wave Energy. ACS Nano, 2022, 16, 6781-6788.	7.3	63

#	Article	IF	CITATIONS
55	A Tuningâ€Fork Triboelectric Nanogenerator with Frequency Multiplication for Efficient Mechanical Energy Harvesting. Small Methods, 2022, 6, e2200066.	4.6	5
56	Fully self-powered instantaneous wireless liquid level sensor system based on triboelectric nanogenerator. Nano Research, 2022, 15, 5425-5434.	5.8	12
57	Smart Textile Triboelectric Nanogenerators: Prospective Strategies for Improving Electricity Output Performance. Nanoenergy Advances, 2022, 2, 133-164.	3.6	59
58	Toward a New Era of Sustainable Energy: Advanced Triboelectric Nanogenerator for Harvesting High Entropy Energy. Small, 2022, 18, e2107034.	5.2	45
59	Self-suspended shell-based triboelectric nanogenerator for omnidirectional wind-energy harvesting. Nano Energy, 2022, 96, 107062.	8.2	23
60	Liquid-solid triboelectric nanogenerators for a wide operation window based on slippery lubricant-infused surfaces (SLIPS). Chemical Engineering Journal, 2022, 439, 135688.	6.6	19
61	A Hybrid Selfâ€Powered Arbitrary Wave Motion Sensing System for Realâ€Time Wireless Marine Environment Monitoring Application. Advanced Energy Materials, 2022, 12, .	10.2	18
62	Reconfigurable Fiber Triboelectric Nanogenerator for Self-Powered Defect Detection. ACS Nano, 2022, 16, 7721-7731.	7.3	15
63	Modeling of Liquid-Solid Hydrodynamic Water Wave Energy Harvesting System Based on Triboelectric Nanogenerator. SSRN Electronic Journal, 0, , .	0.4	0
64	Recent Progress on Wave Energy Marine Buoys. Journal of Marine Science and Engineering, 2022, 10, 566.	1.2	20
65	Dynamical Response of A Floating Plate to Extreme Water Waves Using A Smoothed Particle Hydrodynamics Algorithm for Nonlinear Elasticity. Physics of Fluids, 0, , .	1.6	5
66	Modeling of liquid-solid hydrodynamic water wave energy harvesting system based on triboelectric nanogenerator. Nano Energy, 2022, 99, 107362.	8.2	28
67	A rotational switched-mode water-based triboelectric nanogenerator for mechanical energy harvesting and vehicle monitoring. Materials Today Sustainability, 2022, 19, 100158.	1.9	7
68	A self-powered and concealed sensor based on triboelectric nanogenerators for cultural-relic anti-theft systems. Nano Research, 2022, 15, 8435-8441.	5.8	9
69	Influence of temperature difference on performance of solid-liquid triboelectric nanogenerators. Nano Energy, 2022, 99, 107431.	8.2	62
70	Allâ€Recyclable Triboelectric Nanogenerator for Sustainable Ocean Monitoring Systems. Advanced Energy Materials, 2022, 12, .	10.2	26
71	Powering data buoys using wave energy: a review of possibilities. Journal of Ocean Engineering and Marine Energy, 2022, 8, 417-432.	0.9	12
72	Triboelectric nanogenerators for marine energy harvesting and sensing applications. Results in Engineering, 2022, 15, 100487.	2.2	13

#	Article	IF	CITATIONS
73	TENG estimation model of voltage production for buoys using particle swarm optimization. Applied Ocean Research, 2022, 125, 103231.	1.8	4
74	Selfâ€Powered Intelligent Buoy Based on Triboelectric Nanogenerator for Water Level Alarming. Advanced Functional Materials, 2022, 32, .	7.8	23
75	Effect of humidity on the performance of polyvinyl chloride based triboelectric nanogenerator. Materials Today: Proceedings, 2022, 66, 2468-2473.	0.9	4
76	High-efficient built-in wave energy harvesting technology: From laboratory to open ocean test. Applied Energy, 2022, 322, 119498.	5.1	15
77	Prediction of Wave Energy Flux in the Bohai Sea through Automated Machine Learning. Journal of Marine Science and Engineering, 2022, 10, 1025.	1.2	4
78	Research on Self-Powered Coded Angle Sensor for Rock Climbing Training. IEEE Sensors Journal, 2022, 22, 17326-17333.	2.4	2
79	Achieving High Power Density and Durability of Sliding Mode Triboelectric Nanogenerator by Double Charge Supplement Strategy. Advanced Energy Materials, 2022, 12, .	10.2	26
80	Ferroelectric La _{<i>x</i>} Fe _{0.1–<i>x</i>} Codoped ZnO Nanorod Triboelectric Nanogenerators for Electrochemical Rhodamine B Degradation. ACS Applied Nano Materials, 2022, 5, 12756-12764.	2.4	4
81	A hybrid triboelectric nanogenerator for enhancing corrosion prevention of metal in marine environment. Npj Materials Degradation, 2022, 6, .	2.6	8
82	Recent Progresses in Wearable Triboelectric Nanogenerators. Advanced Functional Materials, 2022, 32, .	7.8	54
83	GnPs/PVDF decorated thermoplastic veils to boost the triboelectric nanogenerator output performance toward highly efficient energy harvesting. Energy Conversion and Management, 2022, 270, 116204.	4.4	4
84	Sliding-impact bistable triboelectric nanogenerator for enhancing energy harvesting from low-frequency intrawell oscillation. Mechanical Systems and Signal Processing, 2023, 184, 109731.	4.4	11
85	Integrated Real-Time Pneumatic Monitoring System With Triboelectric Linear Displacement Sensor. IEEE Transactions on Industrial Electronics, 2023, 70, 6435-6441.	5.2	8
86	Recent advances in stretchable, wearable and bio-compatible triboelectric nanogenerators. Journal of Materials Chemistry C, 2022, 10, 11439-11471.	2.7	16
87	Coreâ€Shell ZnO@Microporous Organic Polymer Nanospheres as Enhanced Piezoâ€Triboelectric Energy Harvesting Materials. Angewandte Chemie, 0, , .	1.6	0
88	Coreâ€Shell ZnO@Microporous Organic Polymer Nanospheres as Enhanced Piezoâ€Triboelectric Energy Harvesting Materials. Angewandte Chemie - International Edition, 2022, 61, .	7.2	5
89	Design of a soft-contact triboelectric nanogenerator for vibrational energy collection and its output performance. Frontiers in Energy Research, 0, 10, .	1.2	0
90	From Triboelectric Nanogenerator to Multifunctional Triboelectric Sensors: A Chemical Perspective toward the Interface Optimization and Device Integration. Small, 2022, 18, .	5.2	26

#	Article	IF	CITATIONS
91	Triboelectric laminates from polydimethylsiloxane bilayers for acoustic energy harvesting. Materials Letters, 2022, 329, 133188.	1.3	5
92	0.5Âm Triboelectric Nanogenerator for Efficient Blue Energy Harvesting of Allâ€Sea Areas. Advanced Science, 2022, 9, .	5.6	29
93	A Mutual Boosting Selfâ€Excitation Hybrid Cell for Harvesting High Entropy Energy at 32% Efficiency. Small, 2022, 18, .	5.2	10
94	Dynamics of triboelectric nanogenerators: A review. International Journal of Mechanical System Dynamics, 2022, 2, 311-324.	1.3	7
95	A triboelectric–electromagnetic hybrid generator for scavenging low-frequency oscillation energy from the environment and human body. Journal of Materials Science, 2022, 57, 21143-21155.	1.7	5
96	Triboelectric Nanogenerator Enabled Wearable Sensors and Electronics for Sustainable Internet of Things Integrated Green Earth. Advanced Energy Materials, 2023, 13, .	10.2	79
97	Renewable energy driving microbial electrochemistry toward carbon neutral. , 2022, 4, 100031.		5
98	Ultra-low frequency vibration energy harvesting: Mechanisms, enhancement techniques, and scaling laws. Energy Conversion and Management, 2023, 276, 116585.	4.4	19
99	Renewable electron-driven bioinorganic nitrogen fixation: a superior route toward green ammonia?. Energy and Environmental Science, 2023, 16, 404-420.	15.6	11
100	A wave energy harvesting system for applications in deep-sea exploration. Sustainable Energy and Fuels, 2023, 7, 1051-1066.	2.5	3
101	Experimental Performance Analysis of a Hybrid Wave Energy Harvesting System Combining E-Motions with Triboelectric Nanogenerators. Journal of Marine Science and Engineering, 2022, 10, 1924.	1.2	2
102	Triboelectric nanogenerators for smart agriculture. InformaÄnÃ-Materiály, 2023, 5, .	8.5	12
103	Breeze-activated wind speed sensor with ultra-low friction resistance for self-powered gale disaster warning. Science China Technological Sciences, 2023, 66, 57-70.	2.0	3
104	Thermoelectric energy harvesting for personalized healthcare. , 2022, 1, .		6
105	Textileâ€Based Triboelectric Nanogenerators for Smart Wearable Systems: Comfort, Integration, and Application. Advanced Materials Technologies, 2023, 8, .	3.0	7
106	Enhanced triboelectric properties of Eu ₂ O ₃ -doped BaTiO ₃ /PVDF-HFP nanofibers. Nanoscale, 2023, 15, 3823-3831.	2.8	7
107	LEGO-block-inspired versatile triboelectric nanogenerators as power cells to harvest vibration energy. Journal of Materials Chemistry A, 2023, 11, 3418-3426.	5.2	1
108	The sealed bionic fishtail-structured TENG based on anticorrosive paint for ocean sensor systems. Nano Energy, 2023, 108, 108210.	8.2	15

#	Article	IF	CITATIONS
109	Design and Experiment of A Hybrid Wave Energy Harvester Based on Tapered Rollers. , 2022, , .		0
110	Multilayered Helical Spherical Triboelectric Nanogenerator with Charge Shuttling for Water Wave Energy Harvesting. Small Methods, 2023, 7, .	4.6	10
111	A guided-liquid-based hybrid triboelectric nanogenerator for omnidirectional and high-performance ocean wave energy harvesting. Nano Energy, 2023, 109, 108240.	8.2	17
112	Modeling the performance of contact-separation triboelectric nanogenerators. Current Applied Physics, 2023, 50, 100-106.	1.1	2
113	Boosting power output of fluttering triboelectric nanogenerator based on charge excitation through multi-utilization of wind. Nano Energy, 2023, 111, 108389.	8.2	4
114	Mechanical intelligent wave energy harvesting and self-powered marine environment monitoring. Nano Energy, 2023, 108, 108222.	8.2	37
115	TENG Harvesting Blue Energy for Carbon Neutralization. , 2023, , 1-27.		0
116	Biowaste Eggshell Membranes for Bio-triboelectric Nanogenerators and Smart Sensors. ACS Omega, 2023, 8, 6699-6707.	1.6	5
117	Bio-Inspired Micro/Nanostructures for Functional Applications: A Mini-Review. Journal of Sensor Science and Technology, 2023, 32, 31-38.	0.1	0
118	Metallic glass-based triboelectric nanogenerators. Nature Communications, 2023, 14, .	5.8	22
119	Advances in solid–solid contacting triboelectric nanogenerator for ocean energy harvesting. Materials Today, 2023, 65, 166-188.	8.3	11
120	Energy Harvesting Technologies and Devices from Vehicular Transit and Natural Sources on Roads for a Sustainable Transport: State-of-the-Art Analysis and Commercial Solutions. Energies, 2023, 16, 3016.	1.6	3
121	Recent developments in 2D materials for energy harvesting applications. JPhys Energy, 2023, 5, 032001.	2.3	4
122	Triboelectric Nanogenerators for Efficient Low-Frequency Ocean Wave Energy Harvesting with Swinging Boat Configuration. Micromachines, 2023, 14, 748.	1.4	2
123	2D Materialsâ \in Based Electrochemical Triboelectric Nanogenerators. Advanced Materials, 2023, 35, .	11.1	10
124	Recent Advances in Triboelectric Nanogenerators for Marine Exploitation. Advanced Energy Materials, 2023, 13, .	10.2	21
125	Boosted energy harvesting in droplet electrochemical cell with non-equilibrium electrical double layer. Nano Energy, 2023, 112, 108437.	8.2	3
126	Smoothed particle hydrodynamics simulations for wave induced ice floe melting. Physics of Fluids, 2023, 35, .	1.6	6

#	Article	IF	CITATIONS
127	Triboelectric Nanogenerator for Self-Charging Power Pack. , 2023, , 1-32.		0
140	Design and synthesis of triboelectric polymers for high performance triboelectric nanogenerators. Energy and Environmental Science, 2023, 16, 3654-3678.	15.6	17
141	Construction of state of charge estimation method for automotive ternary batteries. , 2023, , 229-253.		0
146	TENG Harvesting Blue Energy for Carbon Neutralization. , 2023, , 1115-1141.		Ο
149	Triboelectric Nanogenerator for Self-Charging Power Pack. , 2023, , 819-850.		0
155	Mathematical Modelling of a TENG-Powered Data Buoy. , 2023, , .		0
177	Concept and Design of a Prototype Autonomous, Modular Subsea Bottom Station. , 2023, , .		0
185	A Review of the Mechanical Design of Materials Based on Molecular Dynamics Simulations. Multiscale Science and Engineering, 2023, 5, 86-103.	0.9	Ο