

# Light bubble energy storage





## Overview

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How do bubble energy generators work?

Here, we report the design of bubble energy generators featuring the cooperative integration of a slippery lubricant-impregnated porous surface and transistor-inspired architecture, referred to as SLIPS-TBG, that can generate electricity from moving bubbles with high stability in submerged conditions.

Can a transistor-inspired bubble energy generator extract energy from small bubbles?

Here, we develop a transistor-inspired bubble energy generator for directly and efficiently harvesting energy from small bubbles. The key points lie in designing dielectric surface with high-density electric charges and tailored surface wettability as well as transistor-inspired electrode configuration.

How do small bubbles harvest kinetic energy?

Directly and efficiently harvesting kinetic energy from small bubbles is not an easy task. Unlike water droplets present in air, small bubbles are randomly distributed in water, whose viscosity is 50-fold larger than air.

Are bubbles energy carriers?

Please read our Terms of Service before submitting an eLetter. No eLetters have been published for this article yet. Bubbles have been extensively explored as energy carriers ranging from boiling heat transfer and targeted cancer diagnosis. Yet, despite notable progress, the kinetic energy inherent in small bubbles.

Why are current bubble energy generators unstable?

Yet, current bubble energy generators are susceptible to unstable performance owing to the degradation of the physiochemical properties of surface materials under the harsh underwater environment such as surface



fouling and wetting transition.

How much voltage does a bubble generate?

A bubble of 0.1 ml released from a nozzle 18.0 mm below the device can generate a voltage of 26.4 V, which is ~6 folds higher than that generated by the SHS-TBG.



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### Moving homes is the fastest way to discover we have been living ...

Moving homes is the fastest way to discover we have been living in a museum of our own forgotten life. Things we haven't looked at in ages. Nay, forgotten we even possessed. Clothes ...

### Bubble energy generator

In this work, we develop a previously unidentified bubble energy generator that directly and efficiently harvests energy from small bubbles without using moving components.



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Scientists studying this mechanism have noted that it represents one of the most efficient energy transfer systems in the natural world,



converting nearly 70% of the stored ...

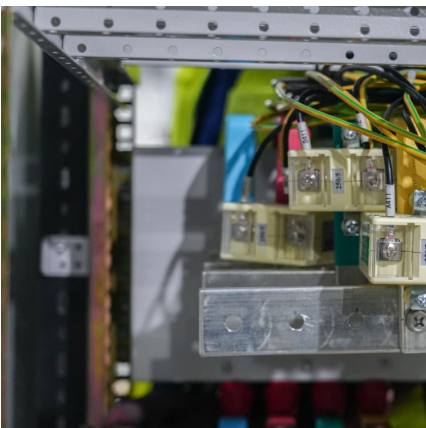
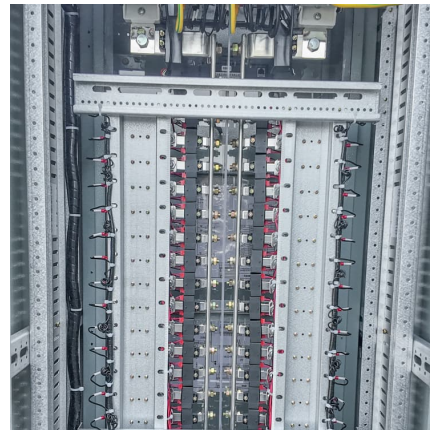


### [DOE/NASA Advances in Liquid Hydrogen Storage Workshop](#)

New Technologies Two new energy-efficient technologies to provide large-scale LH2 storage and control capability Passive thermal control: the glass bubbles insulation system (evacuated) is ...

### [Scientists Believe Light Speed Travel Is Possible.](#)

"In order to have a bubble about 100 meters wide traveling at precisely the speed of light, you would need about 100 times the mass of the ...



### **Acoustic Energy Storage in Single Bubble Sonoluminescence**

The storage of acoustic energy gives a framework for understanding how light intensities depend so strongly on ambient gases and liquids and suggests that the light ...



### Developing large-scale energy storage to alleviate a low-carbon energy

Moreover, the simulation for the operation of the electricity market shows that in the case of electricity oversupply, the thermal power can be deliberately bid at a low price, and the nuclear ...



### Bubble energy generator

Abstract Bubbles have been extensively explored as energy carriers ranging from boiling heat transfer and targeted cancer diagnosis. Yet, despite notable progress, the kinetic energy ...

### Performance enhancement of latent heat thermal energy storage ...

In this study, the application of the bubble injection method to the phase change material (PCM) is proposed to improve charging performance of a latent heat thermal energy ...



### A bubble energy generator featuring lubricant-impregnated ...

Here, we report the design of bubble energy generators featuring the cooperative integration of a slippery lubricant-impregnated porous surface and transistor-inspired ...



### [World's Largest Liquid Hydrogen Tank Nearing Completion](#)

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### [Light-Assisted Energy Storage Devices: Principles, ...](#)

This review systematically summarizes the state-of-the-art in photo-assisted energy storage devices, covering their working principles, ...

### **Acen seeks green light for 12-hour pumped hydro storage project ...**

6 ???· The Philippines-based renewables and energy storage developer Acen Australia says its 800 MW, 12-hour duration Phoenix pumped hydro energy storage project planned for ...



### [Energy Efficient Large-Scale Storage of Liquid Hydrogen](#)

The new storage tank incorporates two new energy-efficient technologies to provide large-scale liquid hydrogen storage and control capability by combining both active thermal control and ...



### light bubble energy storage

In this paper, the latent thermal energy storage device driven by bubble flow is experimentally investigated. With the usage of low melting point paraffin and the pattern of free expansion in a ...



### Heat transfer enhancement of latent heat thermal energy storage ...

Bubble-driven flow and nanoparticles applied altogether increased the average charging power by 1.41 times. Therefore, it was confirmed that the combined application of nanoparticles and ...

### [NiFe2O4 / rGO nanocomposites produced by soft bubble ...](#)

The developed composite exhibited excellent electrochemical and visible light driven photocatalytic performance that target the issues related to energy storage as well as ...



### Acoustic Energy Storage in Single Bubble Sonoluminescence

Single bubble sonoluminescence is understood in terms of a shock focusing towards the bubble center. We present a mechanism for significantly enhancing the effect of shock focusing, ...



[Reduced graphene oxide bubble-architected N-doped...](#)

Zn-ion hybrid capacitors (ZICs) emerge as a compelling energy storage architecture that combines the high energy/power density derived from two complementary mechanisms: the ...



**Efficient bubble energy harvesting by promoting pressure ...**

Here, a complete energy transfer and conversion model for the subsea bubble energy harvesting is established for the first time. Regardless of the type of transducer used in ...



**Light-Material Interactions Using Laser and Flash Sources for Energy**

This review provides a comprehensive overview of the progress in light-material interactions (LMIs), focusing on lasers and flash lights for energy conversion and storage ...





### Bubble Up Induced Graphene Microspheres for Engineering ...

Translating the material merits of graphene to practical supercapacitor devices is critical for promoting capacitive energy storage, but is challenging due to the limited scalability in ...

### Manipulating trapped air bubbles in ice for message storage in ...

Message storage using documents and telecommunications encounters high energy consumption and a short life cycle in cold regions. Easily available low temperature and ...

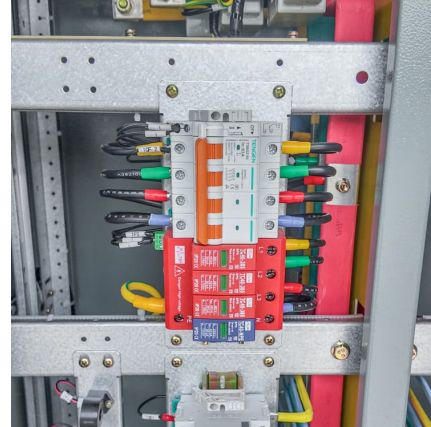


### Liquid-Solid Triboelectric Nanogenerator for Bubble Energy ...

Despite notable progress, how to harvest the energy inherent in small bubbles remains a significant challenge. Herein, a bubble driven triboelectric nanogenerator (BD ...

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### [Bubble energy nanogenerators. Heat and Mass Transfer](#)

Bubble Energy Nanogenerators (BuNGs) are one of the latest emerging technologies to convert the kinetic and potential energy of air bubbles in water into electrical energy.

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