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AFFORDABLE AND CLEAN ENERGY

Research

New Material Exceeds the Limit of Planck's Law

NYCU Photonics Professor, Shawn-Yu Lin published his research on a new "Super-Planckian" material in Nature Scientific Reports. The light emitted by the material when heated appears to exceed the limits set by that natural law for black bodies, and therefore can be used to realize super-intense, tunable LED-like infrared emitters. The material can be used to generate highly efficient light sources when heated through waste heat recycling or partial infrared for thermophotovoltaics applications.


Highly Efficient Quantum Dot Photocatalysts for Hydrogen Production

NYCU Materials Science Professor, Yung-Jung Hsu has successfully developed ZnSe-AgInSe₂ quantum dot photocatalysts. By controlling the proportions of Zn and Ag in the alloy, the quantum yield of H₂ production can reach 3.4 % under irradiation at 600 nm. This technique for improving H₂ production can be applied to hydrogen fuel cells, providing an energy-saving and carbon-reducing green energy technology on top of an already sustainable form of renewable energy to reduce our reliance on highly polluting fossil fuels.

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25
Course Units


1895
Students who chose the Course Units

Social Impact

New Electricity Saving Initiative

In response to the Paris Agreement signed in 2016, the Taiwanese government declared its Nationally Determined Contribution, vowing to reduce emission levels to 20% below that of 2005 by 2025. NYCU has vowed to implement the government's "New Electricity Saving Initiative". The University established the Energy Conservation Promotion Committee to supervise its annual electricity and oil use reduction goals. The University also actively uses new technologies to develop renewable energy, including solar cells, fuel cells, and hydrogen energy. NYCU provides these technologies and the energy generated to the agricultural, industrial, and technology sectors. NYCU also developed an LED fishing light attractor to assist offshore fisheries

reduce electricity and oil consumption while increasing profit.

Cultivate Energy-Saving Startups

Committed to reducing mankind's reliance on coal and petroleum, the NYCU Center of Industry-Academia Collaboration is currently supporting eight energy-saving startups. For example, "Friendly Energy Corporation," "Songyi System," and "Jackson Lighting" all make LED lights; "Jotun Technologies" does biogas power generation; "Hsiung Han Technology" and "DaDaDa Co., Ltd." develop energy-saving management systems; "Megago Tech Co., Ltd." and "InnoKnight Inc." specialize in smart electric vehicles and electric vehicle charging fee calculation systems.

Student Cultivation

Renewable Energy Courses

The NYCU Continuing Education Center offers energy technology courses that introduce different kinds of energy conversion technology, including energy generation (solar energy, wind energy, biofuel, geothermal energy, and marine energy), energy storage (energy storage systems, hydrogen energy, fuel cells, and applications), and energy conservation (electricity and energy-saving lighting, energy-saving building, energy-saving air conditioning, and industrial energy saving). The courses also explain global energy development trends, as well as Taiwan's energy policies and energy transformation targets, thereby helping members of the public understand the urgency and necessity of developing renewable energy.

Renewable Energy Technology Conference

In 2020, NYCU held the International Conference on Emergent Functional Matter Science, which featured the world's latest forward-looking renewable energy technology. Participants discussed three major research topics: energy & optoelectronic materials, sensor & biotech, and emergent nanomaterials. This allows students to understand the current development of green energy technology.

10.8%
Percentage of All Taiwan Publications



Stewardship

Green Building

Since 2015, NYCU has followed the government's "Green Building Implementation Program" regarding buildings that have passed Taiwan's green building certification, EEWH. The University has five certified green buildings, including one diamond-level, two silver-level, and two bronze-level buildings. These buildings all have architectural designs that emphasize symbiosis with the environment and sustainable development, in line with the certification's nine indicators, which include biodiversity, energy-saving, and CO2 emissions reduction.

Solar Energy Generation

In 2020, solar PV power generators were installed in the Yangming, Guangfu, Boai, and Tainan campuses. According to the open information available on the monitoring website, these generators generated a total of 1,923.14 kWp of power. They are expected to conserve 2.413 million kWh of power each year, drastically reducing carbon emissions by 4,356 metric tons, which can help reduce the overall demand for carbon-intensive energy.


1343
Publications in SCOPUS

