

# NET NEWS HUB

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## **NTU artificial leaf splits contaminated seawater into hydrogen**



Nanyang Technological University has presented an “artificial leaf,” a perovskite device that uses solar energy to split contaminated seawater into hydrogen by electrolysis. The process also breaks down hydrazine, a highly toxic pollutant common in industrial wastewater. The work was published in Nature Communications under the title “Self-powered artificial leaf using perovskite photocathode for solar hydrogen production and hydrazine degradation.”

### **How the artificial leaf works**

The research team, led by Lydia Wong, designed the anode with a catalyst that decomposes hydrazine into hydrogen and nitrogen. According to the team, this design also suppresses the formation of corrosive and toxic chlorine compounds from the seawater.

The cathode was fabricated from lead halide-based perovskites, which capture light and turn it into electricity. The researchers said the photocurrent density, meaning the current generated per illuminated area of the device, was among the highest ever reported for lead-based perovskite cathodes.

Performance proved durable as well: the device ran stably for more than 72 hours under illumination matching the intensity of sunlight that reaches Earth's surface on a clear day, producing hydrogen at a rate comparable to similar solar-powered devices, the team said.

### **Commercial AEM electrolyzer starts up at Port of Antwerp-Bruges**

US electrolyzer developer Power to Hydrogen (P2H2) has begun commercial green hydrogen output in the NextGen District at the Port of Antwerp-Bruges. Its 500 kW system, made up of two 250 kW stacks, was delivered to the site in August and is reportedly the first commercial deployment of 250 kW anion exchange membrane (AEM) stacks.

The Ohio-based company said the facility is more than 10 times larger than the stacks used in conventional AEM systems. "Now operational, the system will initially produce up to 70 tonnes of green hydrogen per year for regional gas supplier Holthausen and other customers in the area," P2H2 said, adding that the hydrogen will mainly serve mobility customers, with industrial offtake a possible addition.

### **Dongfeng shows hydrogen trucks in Hannover**

Dongfeng Motor Group displayed three hydrogen-powered vehicles at a trade fair in Hannover, Germany: a workhorse for long-haul logistics, a dual electric-hydrogen truck, and an intercity truck for cold-chain deliveries.

All three rest on a platform with a 400 kW hydrogen fuel cell stack offering efficiency above 58%. The automaker said hydrogen consumption can be as low as 7 kg per 100 km, while curb weight starts at 8.8 tonnes.

### **Denmark opens EU's first full-scale CO<sub>2</sub> storage site**

The European Union's first full-scale CO<sub>2</sub> storage site has opened in Denmark, inaugurated by the country's king. The Greensand facility is led by Ineos Energy together with Harbour Energy and the Danish North Sea Fund (Nordsøfonden).

"Greensand expects to store up to 400,000 tonnes of CO<sub>2</sub> annually in this first commercial phase, scaling toward a potential of up to 4 million to 8 million tonnes annually at full capacity," Ineos said.

Separately, H2 Mobility has launched trial operations at its new hydrogen refueling station at Hannover-Langenhagen Airport in Germany, where both commercial vehicles and passenger cars can now fill up. The company, which develops, builds and operates refueling infrastructure for all vehicle classes, said Langenhagen-based logistics firm Schreck + Batz Logistik took delivery of a hydrogen truck there for testing purposes.

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