

Technology Trending: A clean energy use and chicken feather fuel cell membranes

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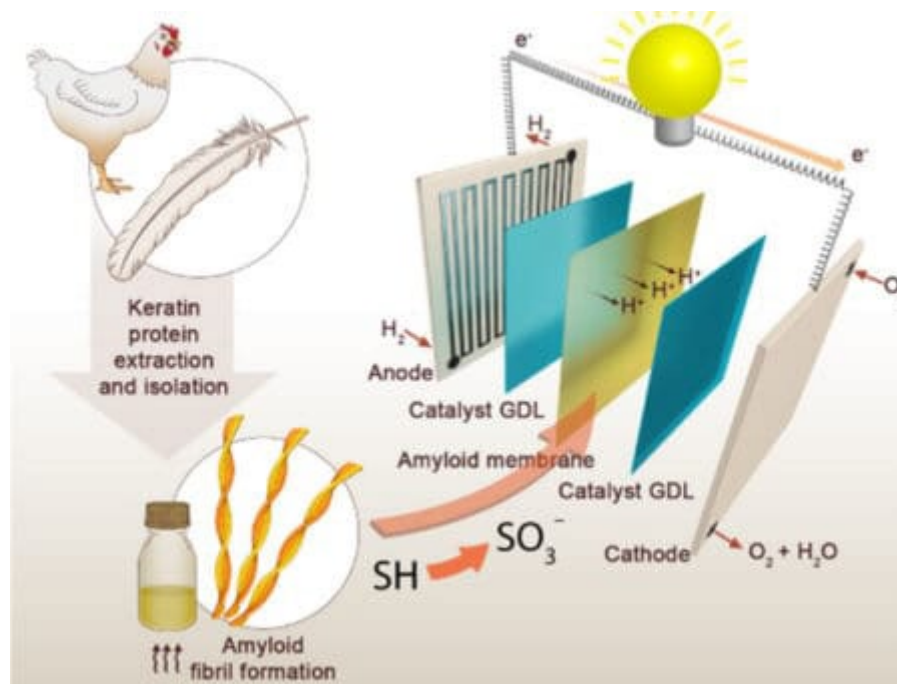


Image: ETH Zurich

The AI energy challenge, a digital currency for clean energy trading in Japan and generating clean electricity with chicken feathers are on the week's technology radar.

Generating clean electricity with chicken feathers

With all the chickens consumed around the world, some 40Mt of feathers are believed to be incinerated annually, with the adverse environmental effects that result including the emissions of CO₂ and other gases such as sulphur dioxide.

But that may become something of the past, with new research from ETH Zurich and Nanyang Technological University Singapore (NTU) demonstrating that a simple and environmentally friendly process can be used to extract the protein

keratin from the feathers and convert it into ultra-fine fibres known as amyloid fibrils. These keratin fibrils can then go on to be used in the membrane of a [fuel cell](#).

In conventional fuel cells, the membranes have so far been made using chemicals, which are expensive and don't break down in the environment. The 'chicken feather' keratin membrane, on the other hand, is environmentally compatible and with the abundance of such keratin is already up to three times cheaper.

"[This] latest development closes a cycle," says Raffaele Mezzenga, Professor of Food and Soft Materials at ETH Zurich.

"We're taking a substance that releases CO₂ and toxic gases when burned and used it in a different setting: with our new technology it not only replaces toxic substances but also prevents the release of CO₂, decreasing the overall carbon footprint cycle."

The next step for the researchers is to investigate the stability and durability of the keratin membrane and to improve it if necessary. A joint patent has been filed and the search is on for investors to develop the technology further and bring it to market.