

Electron storage added to molecular package that converts light to chemical energy

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The Virginia Tech chemistry research group that has been creating molecular complexes that use solar energy to produce hydrogen from water has added an additional capacity to their supramolecule.

They will present the research at the 233rd national meeting of the American Chemical Society in Chicago March 25-29.

Karen Brewer, professor of chemistry, explains that the new, more robust molecules still harness light and convert it to chemical energy by splitting water to produce hydrogen. “What is different is the way the systems function. It is a three part molecule. The first part is a light absorber, harnessing visible and UV light. The second part is an electron reservoir. The third part is the catalysis to make hydrogen from water.” All of these sub-units are coupled into one large supramolecular assembly.

She said the new molecules are expected to enhance efficiency. “It is a different kind of energy production reaction – not married to hydrogen but linked to whatever catalyst is selected. For example, we can conceivably use carbon dioxide to produce methanol or other reduced forms of carbon dioxide.”

The new molecular complex can also bind to DNA, providing applications in another Brewer group project – light-activated drug delivery to disease sites.

Source: Virginia Tech

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