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## Hybrid material potential



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Source: The Engineer Online

Researchers at [Ohio State University](#) have created a material that absorbs frequencies from the entire light spectrum and has greater ability to generate electrons for use in solar energy.

Solar cells generate power by energising atoms in the material and allowing the electrons to flow out of the device as an electrical current. However, in conventional cells the electrons are only able to stay loose for a fraction of a second making it difficult to perform charge separation.

Today's solar cells can only use a small amount of the energy contained in sunlight. However the new hybrid material, made by combining electrically conductive plastic with metals such as molybdenum and titanium, has the potential to keep electrons free to generate current for much longer.

Its design was generated on a computer at the [Ohio Supercomputer Center](#) and then given to researchers at [National Taiwan University](#) who created molecules of the material in a liquid solution.

Tests performed on the solution revealed that the material was emitting electrons in both a singlet energy state and a triplet energy state. Electrons in a triplet state stayed free seven million times longer than in conventional solar cell materials. The longer-lived excited state of the electrons will allow researchers to better manipulate charge separation.

The tests provide proof of the beneficial qualities inherent in hybrid solar materials, but the concept remains years from commercial development.



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