

MEDIA RELEASE



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Australian and German researchers turn red into yellow for solar breakthrough

Low cost solar cells suitable for rooftop panels could reach a record breaking 40 per cent efficiency following an early stage breakthrough by a University of Sydney researcher and his German partners.

With Australian Solar Institute support, Professor Tim Schmidt from the University's School of Chemistry, together with the Helmholtz Centre for Materials and Energy, has developed a "turbo for solar cells" called photochemical upconversion that allows energy that is normally lost in solar cells, to be turned into electricity.

The finding has been published in the [Energy & Environmental Science journal](#).

Professor Tim Schmidt said using the upconversion technique eliminates the need for the costly redevelopment of solar cells.

Upconversion is a process which harvests the part of the solar spectrum currently unused by solar cells.

"We are able to boost efficiency just by forcing two energy-poor red photons in the cell to join and make one energy-rich yellow photon that can capture light, which is then turned into electricity," Professor Schmidt said.

"We now have a benchmark for the performance of an upconverting solar cell. We need to improve this several times, but the pathway is now clear."

Australian Solar Institute Executive Director Mark Twidell said this is a great example of successful collaboration between leading Australian and German solar researchers.

"Together, Australia and Germany can accelerate the pace of commercialisation of solar technologies and drive down the cost of solar electricity," Mr Twidell said.

"That's why the Australian Solar Institute is supporting collaboration between the two countries through the Australia-Germany Collaborative Solar Research and Development Program."

The Australia-Germany Collaborative Solar Research and Development Program is open until 29 August. Application materials are available on the ASI website, www.australiansolarinstitute.com.au

The results of the research are available in the Energy & Environmental Science (DOI: 10.1039/c2ee21136j) at <http://pubs.rsc.org> and a project fact sheet is available on the ASI website, www.australiansolarinstitute.com.au/upconversion

The Australian Solar Institute is a \$150 million commitment by the Australian Government to support the development of photovoltaic and concentrating solar power technologies in Australia.

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