

Laser optimisation to improve solar-cell conversion efficiency

A new federally funded Australian National University research project may deliver significant improvements in solar cell efficiency and cost in under two years.



Credit: ANU School of Engineering

The Minister for Resources and Energy, Martin Ferguson, has announced funding for an Australian National University (ANU) engineering project that aims to increase solar cell efficiency. The project will focus on improvements in a fabrication process known as laser chemical processing.

Funding for the project was provided through the federal government's [Australian Solar Institute](#).

According to project manager Dr Klaus Weber from the Research School of Engineering at ANU, the \$350,000 project will produce results in less than two years.

'By refining laser chemical processing technology we aim to enable solar cell fabrication with increased efficiency and decreased manufacturing costs,' says Dr Weber.

'At present the laser technology allows the local modification of the properties of solar cells using a laser beam guided within a chemical jet.

'In contrast to other processes, it results in no heating of the rest of the solar cell. The process is used to create suitable regions for the electrical contacts of the cell.

'This project will employ cutting edge laser technology and diagnostic tools to optimise these laser properties to ensure very reliable and uniform contact regions, and to enable processing at very high speed, which is essential for low process cost.

The improvement in contact regions will drive significant improvement in the solar cell conversion efficiency.

'When implemented without a significant increase in manufacturing costs, this results in a reduction in the cost of

electricity generated by the cells,' says Dr Weber.

The project will be a collaboration with Fraunhofer ISE in Germany, the world's largest solar research institute and a world leader in photovoltaics research.

Source: ANU

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