

# Solving global warming with nanoporous materials

November 20 2015, by Andrew Spence

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Removing carbon dioxide gases from the atmosphere to reduce global warming and converting them into green energy is at the heart of a cutting edge research project.

Professor Ajayan Vinu, whose research into nanoporous carbon nitride is creating excitement among environmental scientists troubled by the rapid progression to critical [global warming](#), will lead the Future Industries Institute at the University of South Australia to solve this problem.

Globally recognised for his work the emerging field of nanoporous materials, Prof Vinu's research into carbon nitrides has found that they have just the right properties to support the capture and conversion of CO<sub>2</sub> molecules.

"Their interesting properties—a semiconducting framework structure and ordered pores—make them exciting candidates for the capture and conversion of CO<sub>2</sub> molecules into methanol which can then be used as a source of [green energy](#) with the help of sunlight and water," Prof Vinu said.

"My goal is to develop this unique approach which has the potential to make a huge contribution to cleaning the environment and addressing one of our most significant environmental problems, the mitigation of atmospheric CO<sub>2</sub>.

"This fascinating material is not only helping in reducing CO<sub>2</sub> levels by developing an efficient, low-cost photo electrochemical semiconductor device, but also offers a clean fuel source from the conversion of absorbed CO<sub>2</sub> molecules.

"Through a strong multidisciplinary approach and deep collaboration with industries I am sure we can create tangible benefits... to translate the research into real products."

Prof Vinu's discoveries have led to worldwide recognition. His work on this novel material and other materials with future-focussed applications has also earned him recognition by key societies in Japan, Germany, India, Iran and Australia.

These include prestigious awards from the Japan Society for the Promotion of Science, Humboldt Foundation and the Australian Research Council.

UniSA Deputy Vice Chancellor Research and Innovation, Prof Tanya Monro said the appointment of Prof Vinu would set the stage for exciting developments at the Future Industries Institute.

"Prof Vinu is a fantastic complement to the Institute which is focussed on research that will seed future industries and also provide solutions to emerging challenges," she said.

"This appointment adds capacity to our strength in materials and energy engineering with a clear pathway to partner engagement and impact."

Provided by The Lead

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