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Building bricks from carbon emissions

A new method that may permanently and safely store carbon emissions generated from fossil fuels and other industrial processes will be trialled in a mineral carbonation research pilot plant to be built at the University of Newcastle.



Credit: Mouse-ear/istockphoto

The ultimate goal is to transform the captured CO₂ emissions into carbonate rock 'bricks' for use in the construction industry, therefore both dealing with carbon storage needs and introducing new green building materials.

Funding has been secured from the Australian and NSW governments and Orica. The project will be managed by Mineral Carbonation International, a partnership between the University's commercial arm Newcastle Innovation, the GreenMag Group and Orica.

A multidisciplinary research team, including Professors Bodgan Dlugogorski and Eric Kennedy from the university and Orica's Dr Geoff Brent, have demonstrated the technology in laboratory settings.

Professor Dlugogorski said the research pilot plant would allow for larger scale testing and determine cost savings and emission reductions compared to other methods of storing CO₂.

'The key difference between geosequestration and ocean storage and our mineral carbonation model is we permanently transform CO₂ into a usable product, not simply store it underground,' Professor Dlugogorski said.

The mineral carbonation technology replicates the Earth's carbon sink mechanism by combining CO₂ with low grade minerals such as magnesium and calcium silicate rock to make inert carbonates.

The process transforms the CO₂ into a solid product that can be used in many ways, including as new green building materials.

'The Earth's natural mineral carbonation system is very slow,' Professor Kennedy said. 'Our challenge is to speed up that process to

prevent CO₂ emissions accumulating in the air in a cost-effective way.'

The research pilot plant is the result of six years of R&D undertaken by a team including experts from the University of Newcastle, the GreenMag Group and Orica. It will be built at the University's Newcastle Institute for Energy and Resources (NIER) and is expected to be operational by 2017.

Source: University of Newcastle

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