

Hydrogen energy project achieves breakthrough

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A new hydrogen storage technology being commercialised by The University of Queensland spin-off company, Hydrexia Pty Ltd, could propel hydrogen gas into the mass market as an alternative green fuel. Hydrexia was established by UQ's commercialisation arm, UniQuest, to commercialise the hydrogen storage technology developed by Associate Professor Arne Dahle and Dr Kazuhiro Nogita from the Division of Materials Engineering.

According to Professor Dahle, practical storage is one of the largest barriers to hydrogen's adoption as a clean fuel source.

“Current hydrogen storage methods are expensive and suffer from performance disadvantages but we've developed a range of magnesium alloys which has the potential to overcome these problems,” said Professor Dahle.

“Using standard casting equipment, we're able to produce alloys that absorb hydrogen like a sponge, store it safely for long periods and release it on demand when either the pressure or temperature is varied.

“The modifications we make to the alloys' nano-structure could allow us to deliver a real solution to using hydrogen safely and economically as a fuel source.”

Under laboratory conditions, the magnesium alloys can store enough hydrogen to allow a vehicle (carrying a 100kg storage unit) to drive 500

kilometres, which meets a target set by the US Department of Energy for hydrogen storage systems by 2010.

Hydrexia's researchers now need to demonstrate that this storage capacity can be achieved in a full-scale prototype at acceptable hydrogen release temperatures.

UniQuest Managing Director, David Henderson said that the scale-up of Hydrexia's promising technology could deliver substantial reductions in cost and weight when compared to existing hydrogen storage systems.

“If the scale-up is successful, UniQuest believes that Hydrexia will be in a position to deliver the most commercially attractive hydrogen storage solution for a range of applications including automotive, stationary and portable fuel-cells,” said Mr Henderson.

“We believe that the company will attract significant interest from the international investment community as well as possible industry partners.”

“Already, UniQuest is in discussions with Advanced Magnesium Technologies Pty Ltd to collaborate on further development and commercialisation of the technology.”

Hydrexia was recently awarded a Queensland Government Innovation Start-up Scheme (ISUS) grant to progress the performance testing and commence business planning.

Source: The University of Queensland

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