Catalyst discovery potential has to revolutionize chemical industry

September 26 2011

University of Alberta Chemistry Professor Steve Bergens and his graduate student Jeremy Johns have discovered a catalyst that has the potential to revolutionise the chemical industry by reducing its environmental footprint, improving efficiency and minimizing risks.

Their findings were published in a top international chemistry journal *Angewandte Chemie* this month and provide the chemical industry with a potential solution to issues surrounding economics, efficiency and environmental factors.

"Our findings are a game changer that people having been seeking an answer to for decades," said Bergens.

Bergen said researchers have been working for more than 50 years to find a "clean" and stable catalyst that produces little to no waste and also has a capacity to provide multiple turnovers. In February of this year his student Jeremy Johns created such a catalyst in his laboratory.

"After years of producing disappointing results I was thrilled to see the results that came out of this particular experiment," said Dr Bergens.

"The chemical industry is making huge efforts to reduce its environmental footprint and their economists and accountants are also looking to reduce the cost of not just transporting catalyst but improving its efficiency," said Dr Bergens.

He said the February 2011 discovery opens numerous doors to make these things happen for industries ranging from pharmaceuticals to agrochemicals.

"Catalysts are notoriously unstable and challenging to transport, and the waste products the reactions to produce chemicals produce are equally challenging," Bergens added.

John's catalyst only produces hydrogen as a waste, something that is easy to burn off or react to produce water.

Bergens says early indications are the catalyst is not just safe but also efficient. The researchers have pushed the experiment to produce 7000 turnovers for one unit of catalyst.

"We are hugely excited , and the challenge now is to identify exactly how this catalyst is made up and how we can produce it in amounts to further advance this discovery," said Bergens.

Provided by University of Alberta