Process to extract hydrogen from plants may lead to biofuel boom

A team of Virginia Tech researchers has discovered a way to extract large quantities of hydrogen from any plant, a breakthrough that has the potential to bring a low-cost, environmentally friendly fuel source to the world.

"Our new process could help end our dependence on fossil fuels," said Y.H. Percival Zhang, an associate professor of biological systems engineering in the College of Agriculture and Life Sciences and the College of Engineering. "Hydrogen is one of the most important biofuels of the future." Zhang and his team have succeeded in using xylose, the most abundant simple plant sugar, to produce a large quantity of hydrogen that previously was attainable only in theory. Zhang’s method can be performed using any source of biomass.

The discovery is a featured editor's choice in an online version of the chemistry journal Angewandte Chemie, International Edition.

This environmentally friendly method of producing hydrogen utilizes renewable natural resources, releases almost no greenhouse gases, and does not require costly or heavy metals. Previous methods to produce hydrogen are expensive and create greenhouse gases.

The U.S. Department of Energy says that hydrogen fuel has the potential to dramatically reduce reliance on fossil fuels and automobile manufacturers are aggressively trying to develop vehicles that run on hydrogen fuel cells.