

Press release

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EFCE recognizes biomass conversion breakthrough

The European Federation of Chemical Engineering (EFCE) has recognised research in biomass-to-sugar conversion technologies which could reduce the size of reactor needed by a factor of up to 5,000 compared with traditional methods.

Dr. Danilo Cantero was awarded the EFCE Excellence Award in Process Intensification for his thesis demonstrating supercritical hydrolysis of cellulose or biomass to sugars.



Dr. Cantero's method uses water at supercritical conditions to de-polymerise the cellulose or biomass, resulting in a faster rate of reaction while also slowing down unwanted glucose decomposition.

The increased rate of reaction allows for a large decrease in reactor volume. Dr. Cantero's research demonstrated that his process could yield the same amount of sugar as conventional methods, using a reactor that's 5000 times smaller. His process is also faster, saving hours or even days compared with existing methods for hydrolysing cellulose or biomass.

In addition, the reactor can act as a heat exchanger; the process employs instantaneous heating and cooling methods which allows for a high yield of sugar from cellulose hydrolysis – as high as 95 per cent.

Dr Cantero completed his thesis titled: '*Intensification of Cellulose Hydrolysis Process by Supercritical Water, Obtaining of Added Value Products*', at the University of Valladolid, Spain.

The award, which comprised of a €1,500 cash prize, was presented to Dr Cantero by the EFCE Working Party on Process Intensification during the fifth European Process Intensification Conference (EPIC 5), which was held in Nice, France, in September 2015.

Related links

[EFCE Media Centre](#)

[ECCE10 + ECAB3 + EPIC 5 joint congress](#)

[EFCE Working Party on Process Intensification](#)

[PhD Thesis summary - 'Intensification of Cellulose Hydrolysis Process by Supercritical Water, Obtaining of Added Value Products'](#)

Photo caption (L-R): Tom Van Gerven, Chair of the EFCE Working Party on Process Intensification; Danilo Cantero; and Jean-Marc Le Lann, Scientific Vice President of EFCE.

Notes to media:

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About chemical engineers

Chemical, biochemical and process engineering is the application of science, maths and economics to the process of turning raw materials into everyday products. Professional chemical engineers design, construct and manage process operations all over the world. Oil and gas, pharmaceuticals, food and drink, synthetic fibres and clean drinking water are just some of the products where chemical engineering plays a central role.

About EFCE

Founded in 1953, The European Federation of Chemical Engineering (EFCE) is a non-profit-making association, whose object is to promote co-operation in Europe between non-profit-making professional scientific and technical societies in 30 countries for the general advancement of chemical engineering and as a means of furthering the development of chemical engineering. See www.efce.org