

## Process for obtaining furfuryl alcohol from furfural

CSIC has developed a process for obtaining furfuryl alcohol comprising the continuous gas phase hydrogenation of furfural with formic acid as the hydrogen source in the presence of a bimetallic Ni and Cu catalyst supported on a graphite support (NiCu/G).

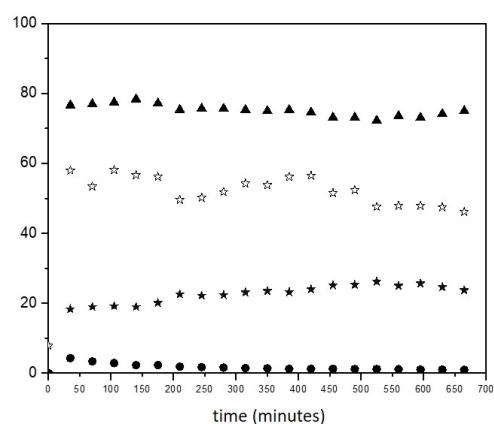
Industrial partners from the chemical or pharmaceutical industry are being sought to collaborate through a patent licence agreement.

### An offer for Patent Licensing

#### A sustainable process from biorefinery products

At the industrial level, the production of furfuryl alcohol from furfural is carried out with Cu-Cr catalysts. However, chromium is a component of high environmental risk and harmful to human health. Alternative methods using noble metals have been described, but the low availability and high cost of these metals imply that they are of no industrial interest. Non-noble metals have also been tested, but although they are less expensive, they require operating conditions that do not make them interesting for industry. On the other hand, catalysts based on Pd and Pt are too active to achieve high selectivities to furfuryl alcohol, so they require the addition of elements, which is a disadvantage in industrial application.

This process uses catalysts based on copper and nickel nanoparticles supported on nanostructured carbon materials, which allow high yields to be obtained and work under operating conditions of temperature and pressure that are useful at an industrial level.



Percentage conversion/selectivity at 185 °C

#### Main innovations and advantages

- The use of the catalyst (NiCu/G) avoids the use of metal catalysts of high environmental risk and harmful to human health or of low natural availability and allows working with small quantities of metal.
- Furfural is a compound obtained from biomass, and is therefore considered a renewable source material as lignocellulosic biomass is very abundant. In addition, it uses a by-product of biorefineries, such as formic acid, which, besides being renewable and low cost, is safer than hydrogen derived from fossil sources.
- The process developed allows continuous operation and eliminates the problems derived from the use of solvents, as it favours the separation of reagents and products.

#### Patent Status

Priority patent application filed suitable for international extension

#### For more information, please contact:

Xavier Gregori

Deputy Vice-Presidency for Knowledge Transfer

Spanish National Research Council (CSIC)

Tel.: +34 93 887 60 04

E-mail: [xavier.gregori@csic.es](mailto:xavier.gregori@csic.es)  
[comercializacion@csic.es](mailto:comercializacion@csic.es)