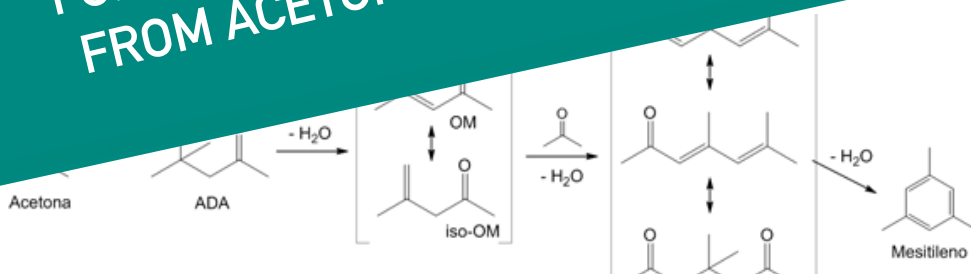




HIGH EFFICIENCY CATALYTIC METHOD FOR THE SYNTHESIS OF MESITYLENE FROM ACETONE IN A SINGLE STAGE

TECHNOLOGY OFFER



COMPETITIVE ADVANTAGES

- ✓ **Cost efficient**, as the method produces mesitylene from acetone in a single stage by heterogeneous catalysis.
- ✓ **Increased sustainability**, as the method uses acetone, a low cost product that can also be obtained from biomass. Acetone is also obtained in the production of phenol, so it can be valued.
- ✓ **Operational improvement**, as it eliminates the characteristic problems of processes based on homogeneous catalysis and discontinuous operation.
- ✓ **Increase in selectivity and performance** with respect to the processes that use other catalysts, going from values around 5 % to values between 75 and 90 %.

PATENTS

ES patent applied.
In time to seek international protection.

TYPE OF COLLABORATION

Licence agreement.

ABSTRACT

The interest in the production of mesitylene is due to its multiple applications in different industrial fields, such as in the chemical, pharmaceutical and energy industry, as it is used for the production of many other chemical products, such as antioxidants, thermal stabilizers for plastics, rubber, adhesives and waxes, plant growth regulators, etc.

Due to the high interest in obtaining mesitylene, new and better catalysts are still needed for its production from acetone, since the current processes are not very selective, not sustainable and not cost competitive.

Researchers from a Spanish university working in chemical engineering have developed a method for producing mesitylene (1,3,5 trimethylbenzene) from acetone in a single stage by heterogeneous catalysis. The method comprises the use of a catalyst formed by a mixture of two solid materials with different catalytic functionality: the first one comprises a material with basic properties, while the second solid comprises a material with acidic properties.

INNOVATIVE ASPECTS

- ✓ The proposed method is competitive, since the materials used (oxides and aluminosilicates) can be obtained in high volumes and are formed by common elements, unlike current processes, which use catalysts that contain unusual or precious metals. In addition, both materials (basic oxide and aluminosilicates) are found in the same catalyst bed, favoring the conversion of acetone to mesitylene to a greater extent.
- ✓ The proposed method presents great selectivity with respect to the processes reported in the literature, increasing the selectivity of the mesitylene from values of around 5% to values between 75 and 90 %.
- ✓ The method is environmentally sustainable. The raw material (acetone) can be economically obtained both from biomass upgrading routes (pyrolysis, ABE fermentation), or as a by-product of the phenol manufacture industries.

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