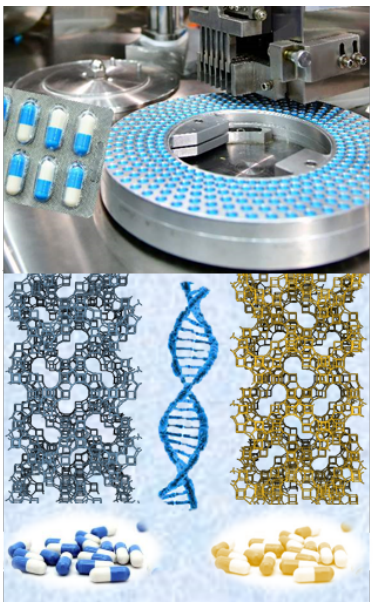
Chiral zeolitic material for synthesis of chiral drugs and chemicals

CSIC has developed a new chiral zeolitic material for the asymmetric synthesis of chiral chemical products. The material has a chiral structure (ITV) with a very high porosity (with extra-large pores with openings of 4.3 x 19.3 Å) and active centers, which allows the catalytic enantioselective processing of large size molecules, reaching enantiomeric excesses in model reactions much higher than any other zeolitic material.

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

An offer for Patent Licensing

Chiral enantioselective heterogeneous and sustainable catalyst



The drama of *thalidomide* in the last century demonstrated the need for producing enantiopure chiral compounds through enantioselective reactions. In fact, the trend towards the so-called "*chiral switch*", which promotes the transition in the commercialization of chiral products from their racemic form to their enantiomerically pure form, is becoming increasingly important in the pharmaceutical industry.

The new material protected by this patent consists in a zeolite microporous structure that combines three fundamental characteristics: a very high porosity that allows processing large molecules; an enantio-enriched chiral structure that enables the enantioselective synthesis of chiral products and active sites that prompts the development of catalytic processes. In addition, the preparation procedure, based on the use of easily accessible natural products, allows the material to be obtained in its two enantiomorphic forms, thus allowing the synthesis of the two enantiomers of the desired chiral molecule.

The tests carried out so far have shown that this material is able to produce large size chiral molecules (at least 12x12 Å) with a high enantio-selectivity.

Main innovations and advantages

- The material shows an extraordinary capacity to discriminate between enantiomers of chiral compounds never before observed for zeolites.
- The particular framework structure of the material allows processing large size molecules (at least12x12 Å).
- The method of synthesis of the material is very simple and requires moderate temperatures (80-60°C) and uses easily accessible precursors.
- The physico-chemical characteristics of the material allow the introduction of various catalytic functionalities for being used in different chemical reactions.
- The solid nature of the catalyst, which can be easily recovered and reused, notably increases the sustainability of the process.

Patent Status

PCT patent application filed

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