



## **Synthesis, characterization and catalytic properties of hierarchical(nanoporous) zeolites with MFI(ZSM-5),FAU (X,Y) and LTA (A) topologies**

Technology reference #1587

### **Problem Addressed**

Templating agents are expensive, and selectivity towards conversion of phenol is low. There remains a need to develop a zeolite with ordered mesoporous structure with enhanced phenol conversion. Further, there exists a need for synthesizing cost-effective catalyst which displays enhanced selectivity towards conversion of phenol

### **Technology**

Ordered and hierarchically porous zeolite crystal catalyst showing enhanced selectivity towards phenol conversion and a method for preparation of the catalyst are disclosed. A solution containing alumina, silica and an organosilane are mixed and treated at a particular temperature for a particular period of time under pre-determined conditions to obtain a highly crystalline zeolite. A MFI- type, FAU- type and LTA- type zeolites are obtained. The zeolite catalyst exhibits a hierarchically porous structure with ordered mesopores. The surface area of the zeolite is in the range of micropores is in the range of 2- 374 m<sup>2</sup> g<sup>-1</sup> and the size of the mesopores is in the range of 89 – 499 m<sup>2</sup> g<sup>-1</sup>. The lifetime of the crystal is at least 20 h.

### **Advantages**

1. hierarchically porous zeolite crystal catalyst
2. Enhanced selectivity towards phenol conversion.

### **Applications**

- Solid acid catalysts production, catalysis and separation process.

### **Inventors**

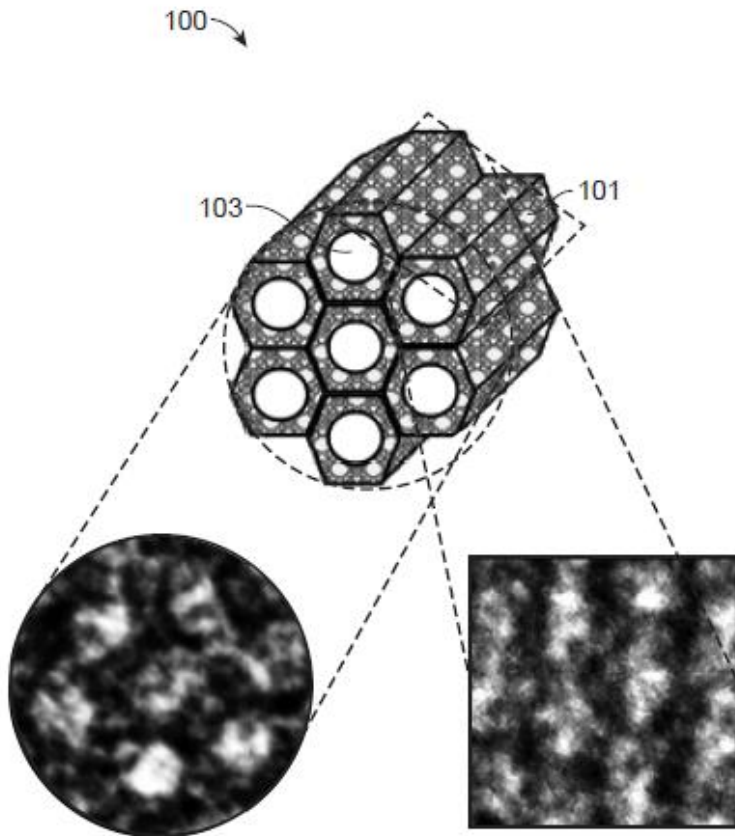
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### **Domain**



Chemistry / Chemical Engineering

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**IIT Madras** is seeking parties interested in licensing and commercialization of this technology.