US 8,007,763 B2, US 8,007,763 B2, and WO 2008/083045 A2, on the other hand, relate to zeolitic materials and their synthesis employing benzyl trimethylammonium-containing compounds either in combination with seed crystals or with a further organotemplate material. As concerns further examples of quartenary ammonium compounds used as structure directing agents in the synthesis of microporous materials, WO 2007/021404 A1 may be cited, which relates to the synthesis of aluminophosphate or silicoaluminophosphate molecular sieves employing trialkylammonium compounds including either a cycloalkyl, a heterocyclic, or an aromatic moiety as the fourth substituent constituting the quaternary ammonium cation contained therein. Examples for the use of more complex quaternary ammonium compounds in the synthesis of zeolitic materials may for example be found in US 4,544,538, which specifically relates to the zeolite SSZ-13 having the CHA-framework structure.

Despite the wide variety of available zeolitic materials both in view of the large number of different types of microporous framework structures, ad well as with respect to the chemical and physical properties afforded by the numerous different zeolite compounds known with respect to each of the framework structure types, there remains on ongoing need for providing further zeolitic materials displaying yet unknown chemical and physical properties. Furthermore, in view of the little amount of control in the self-organization processes leading to microporous structure, a particular need exists for synthetic methodologies allowing for the gradual variation of the chemical and physical properties of the resulting zeolitic materials for making it possible to fine-tune the resulting product in function of the specific requirements needed for a given application.

SUMMARY

In an aspect, there is provided a process for the preparation of a zeolitic material having an MFI-type framework structure, comprising the steps of:

(1) providing a mixture comprising one or more sources for YO_2 and one or more alkenyltrialkylammonium cation $R^1R^2R^3R^4N^+$-containing compounds as structure directing agent; and

(2) crystallizing the mixture obtained in step (1) to obtain a zeolitic material;

wherein Y is a tetravalent element, and

wherein R^1, R^2, and R^3 independently from one another stand for n-propyl; and

R^4 stands for 2-propen-1-yl or 1-propen-1-yl.

In another aspect, there is provided a synthetic zeolitic material having an MFI-type framework structure obtainable and/or obtained according to the process as defined above.

In another aspect, there is provided the use of an alkenyltrialkylammonium cation $R^1R^2R^3R^4N^+$-containing compound as structure directing agent in the synthesis of

microporous materials, preferably in the synthesis of zeolitic materials, wherein R^1, R^2, and R^3 independently from one another stand for n-propyl; and
R^4 stands for 2-propen-1-yl or 1-propen-1-yl, and preferably 2-propen-1-yl.

DETAILED DESCRIPTION

It is therefore the object of the present invention to provide a zeolitic material having an MFI-type framework structure displaying unique chemical and physical properties in particular with respect to potential applications such as in the field of catalysis as well as a method for obtaining such a zeolitic material. Furthermore, it is the object of the present invention to provide an improved process for the preparation of such a unique zeolitic material having an MFI-type framework structure which allows for the fine tuning of its physical and chemical properties in order to achieve an improved versatility relative to specific requirements in given applications and in particular for providing a high variability and thus an improved optimization potential in catalytic applications and the like.

Therefore, the present invention relates to a process for the preparation of a zeolitic material comprising the steps of:

(1) providing a mixture comprising one or more sources for YO_2 and one or more alkenyltrialkylammonium cation $R^1R^2R^3R^4N^+$-containing compounds as structure directing agent; and