03-P-15 - Rapid and mass production of porous materials using a continuous microwave equipment

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A continuous microwave equipment (CME) has been developed to achieve a rapid and mass production for ZSM-5 and NaY zeolite. A precursor mixture for synthesis of ZSM-5 was prepared by mixing aluminosilicate gel with a nanoseed solution obtained under microwave irradiation, and pumped into the CME. Duration time in the CME was 5 min to accomplish the crystallization of ZSM-5 under microwave irradiation. For NaY zeolite, the precursor gel without nanoseeds was introduced into the CME and crystallization time was within 30 min. XRD and SEM results indicate that the structural properties of ZSM-5 and NaY zeolite obtained are similar to those obtained using batch-type microwave instrument and by conventional hydrothermal synthesis.

03-P-16 - Hydrothermal synthesis of vanadium-containing microporous aluminophosphates *via* the design of experiments approach

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An experimental design has been applied to the hydrothermal synthesis of VAPO-11 molecular sieve (AEL structure) from a $VOSO_4 \cdot 5H_2O \cdot Al(iPrO)_3 \cdot Pr_2NH \cdot H_2O$ gel. Statistical models that relate the selected synthesis variables with the crystallinity are proposed. The optimal synthesis conditions for the two structures (single phase or physical mixture with the AFO (VAPO-41) structure) are inferred from the models and compared with the literature data on single phase synthesis. Highly crystalline single-phase VAPO-11 can be best prepared at 170°C from a synthesis gel with low vanadium content and high water content.

03-P-17 - Synthesis of a thin Silicalite-1 membrane, through sintering, for use in a membrane reactor

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To meet the dual challenge of selectivity and permeability for membranes used in reactors, there has been a thrust to support thin layers of highly selective membrane material on a porous support with high permeability. In this report we present the synthesis of such a thin molecular sieve layer of Silicalite-1 on a α-Al_2O_3 support through the sintering of colloidal zeolite crystals (~150 nm) deposited with the Langmuir-Blodgett technique on the support.