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(54) Title: SYNTHESIS OF ZSM-5 CRYSTALS WITH IMPROVED MORPHOLOGY

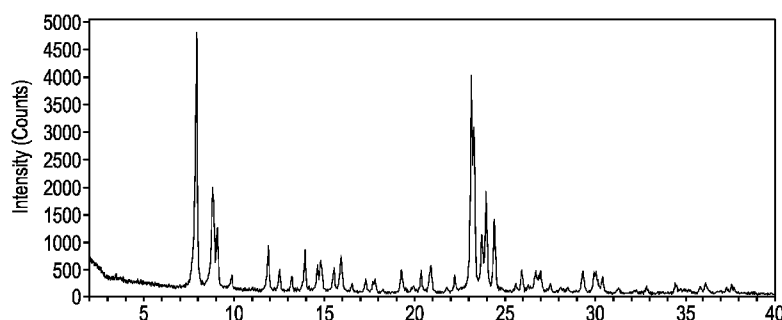


FIG. 4a

(57) **Abstract:** Methods are provided for synthesizing crystals having a ZSM-5 framework structure from synthesis mixtures suitable for synthesis of ZSM-12 framework structure crystals in the absence of seed crystals with a ZSM-5 framework structure, such as in the absence of any seed crystals. For synthesis mixtures with a sufficiently high $\text{XO}_2:\text{Y}_2\text{O}_3$ ratio, seeding a synthesis mixture with ZSM-5 seed crystals can result in production of pure phase ZSM-5 crystals with a new morphology. The morphology can include rod-like primary crystallites with a length of about 0.5 μm or less that are organized/aggregated into larger secondary crystal structures. The aggregation of the primary crystallites into a secondary crystal structure can allow for an unexpectedly large mesoporous surface area for the ZSM-5 crystals.