

Transformation of 2-(trifluoromethyl)aniline over ion-exchanged montmorillonites: formation of a dimer and cyclic trimer.

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Streszczenie

The adsorption of 2-(trifluoromethyl)aniline (2TFMA) on the interlamellar surfaces of KSF, K-10, Cu^{2+} -, Ni^{2+} -, Fe^{3+} - and Al^{3+} -montmorillonites has been investigated. Structures of the dimer and cyclic trimer species, formed via condensation reactions, were determined using NMR and mass spectral data. The catalytic activity of montmorillonite was influenced by the specific cation present with the Ni^{2+} -montmorillonite producing the largest number of transformation products. The highest yield of 2-{difluoro-[2'-(trifluoromethyl)anilino]methyl}aniline (dimer) was obtained for Al^{3+} -montmorillonite. The Cu^{2+} -montmorillonite demonstrated the greatest activity in producing a 12-membered ring compound, $(2\text{-CF}_2\text{C}_6\text{H}_4\text{NH})_3$, and gave the highest ratio of trimer to dimer yields. The presence of residual water in the Al^{3+} -montmorillonite allows conversion of some 2TFMA to a carboxylic acid.

Słowa kluczowe

Catalysis, Montmorillonite, Polycondensation, NMR-spectra

Adres publiczny

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