Acetalization of furfural with zeolites under benign reaction conditions

Acetalization is a viable method to protect carbonyl functionalities in organic compounds and offers a potential synthetic strategy for synthesizing derived chemicals. In this work, several families of commercial zeolites have been employed as solid acid catalysts in the acetalization of furfural to form furfural diethyl acetal at room temperature using ethanol as a renewable solvent. Among the tested catalysts, H-USY (6) provided the highest catalytic activity (79% acetal yield), excellent selectivity and reusability in five consecutive reaction runs. Process parameters such as, e.g. reaction time, catalyst loading and applicability of different lower alcohols were evaluated and optimized.

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