

A novel Fe-containing clinoptilolite for wastewater remediation: degradation of azo-dyes acid orange 7 by H₂O₂ and ascorbic acid

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Description

A novel 3 wt.% Fe-containing clinoptilolite catalyst was prepared starting from a natural zeolite followed by a ion-exchange synthesis. A Fe-containing ZSM-5 catalyst (commercial zeolite as support) was also prepared for comparison purpose. Both Fe-based catalysts, along with the unexchanged samples, were characterized by complementary techniques (e. g. X-ray powder diffraction (XRD), N₂ physisorption at -196 degrees C, transmission electron microscopy (TEM), field emission scanning electron microscopy (FESEM), energy dispersive X-ray spectrometry (EDS) microanalysis). Then, their possible application in wastewater remediation was tested with a solution of azo-dyes acid orange 7 (AO7), as target molecule for azo dyes. As a whole, remarkable results in the AO7 degradation were obtained with the Fe-clinoptilolite in the presence of both ascorbic acid (AA) and H₂O₂. Specifically, AO7 conversion of ...