

Charge Separation vs. Effective Concentration: A Kinetic Analysis of the Alkylation of Phenol Under Homogeneous and Phase Transfer Catalysis Conditions

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A series of symmetrical, alkyl substituted, quaternary ammonium salts were examined for their catalytic and intrinsic reactivity. Ammonium phenolate salts were prepared from the corresponding ammonium bromides and their activity was evaluated for the *n*-butylation of phenol. Small differences in intrinsic reactivity were observed with alkyl lengths greater than C₂. In contrast, under phase transfer catalysis conditions large differences in alkylation rate were observed among C₂, C₃ and C₄ tetrasubstituted ammonium catalysts. Consequently, the intrinsic reaction rate plays only a minor role in the reactivity of quaternary ammonium catalysts using a phase transfer process.

