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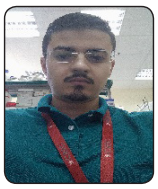
Abstract



Micellar Catalysis Strategy of Cross Condensation Reaction: The Effect of Polar Heads on the Catalytic Properties of Aminoalcohol Based Surfactants

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Abstract:
The effect of the polar head and the concentration of quaternary ammonium surfactants (C14EtOH, C14iPrOH, C14PrOH, where, 14 = carbon number iPrOH = iso-propanol, EtOH = ethanol, PrOH = propanol) in micellar catalysis for the cross-condensation reaction (Claisen–Schmidt) was investigated. The reaction in the Micellar-NaOH system with different concen-trations of surfactants above the critical micelle concentration from 15 to 30 mmol between benzaldehyde and acetophenone was used as a model of reaction for this study. The examination of the effectiveness of the catalytic activity reveals that the compound C14EtOH has the best yield (80% of the desired product), followed by C14iPrOH and C14PrOH. The results were interpreted according to the solubilization capacity, droplet size analysis of reagents (benzaldehyde and acetophenone) in the micellar medium and stability of reaction intermediate (enolate) by the electrostatic interactions generated by positive charge of N+ quaternary ammonium atom. Therefore, the quantum calculations carried out by DFT method for surfactants in the aqueous medium, show that electrophilicity degree and the reaction yield% for three cationic surfactants varies in the same following order: C14PrOH < C14iPrOH < C14EtOH.

Biography:
Zakaria Hafidi Third cycle doctorate in organic synthesis I am currently working on the synthesis of new surfactants based on Ester quaternary and their application as antibacterial agents. I have a publication in the journal surfactants and detergent indexed in web of science and Scopus and also I have other article being submitted.

Publication of speakers:

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- Zakaria Hafidi et al..Zayas, Hazit A., et al. "Thermoresponsive polymer-supported L-proline micelle catalysts for the direct asymmetric aldol reaction in water." ACS Macro Letters 2.4 (2013): 327-331.

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