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Design and development of novel functionalized surfactants and mixed micellar systems for chemical reactions

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The studies on kinetics and physicochemical properties of novel functionalized green surfactants are of paramount importance for the acyl transfer reactions. Over the past several years we have been trying to figure out new micellar hydrolytic catalysts as nonreactors for the various chemical reactions. The functionalized surfactants with pyridinium/imidazolium core in their head groups and α -nucleophilic moiety viz. oximate/hydroxamate/ amidoximate groups have been established. More recently, however, the focus has shifted to surface active ionic liquids (SAIL) as a green micellar system. In this presentation, the important trends, recent development and novel strategies for the kinetic efficiency of some pyridinium based functionalized surfactants and SAIL toward the micellar hydrolysis of carboxylic and phosphate esters will be reviewed. The physicochemical and surface properties of a single and mixed system of functionalized surfactants have been studied by surface tension, conductivity and fluorescence measurements. The deprotonation behavior has also determined. The various quantitative kinetic models and theories of mixed micellization have also been applied successfully.

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