

Ionic Liquid–CNT Hybrid and Their Application to Catalytic Reactions

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Ionic Liquids (ILs) are made up of two components i.e. the anion and cation. As both anion and cation can be varied, these materials can be designed for a particular set of properties such as hydrophilicity/hydrophobicity. The readily tunable physicochemical properties of ILs, especially imidazolium cation-based ILs have led to intense interest in these materials as alternatives to conventional organic solvents in a range of synthesis, catalysis and electrochemistry. However, no extensive studies on the hybridization of ionic liquids with nanomaterials have been made. Recently, we have demonstrated that the tunable property of ILs can be transposed onto the self-assemble monolayers formed with thiol- and trialkoxysilane-functionalized imidazolium salts onto the Au and SiO₂ surfaces. It has been also found that through the surface-functionalization of carbon nanotubes with imidazolium salts, the solubility of the ionic nanosized materials can be controlled. These ionic nano-materials could have a potential for variety of applications such as support materials for nanocatalysts. In this symposium, our recent studies on the ionic liquid–nano hybrid and their catalytic applications will be presented.