

Abstract

Nuclear Magnetic Resonance (NMR) spectroscopy is a versatile technique that has contributed a lot in determining the structure of almost any organic and biological molecule. Another important function of NMR spectroscopy is that it provides highly accurate kinetic data for complex liquid system. The application of NMR spectroscopy to ionic liquids has significantly grown in recent years. Here, NMR spectroscopy is exploited to do translational motion study of ionic liquids.

Ionic liquids possess various outstanding properties such as low vapor pressure, nonflammable and thermal and chemical stability[2], but have low ionic conductivity. Since Ionic liquids are used as a dielectric medium in various devices such as lithium-ion batteries, however, due to poor ionic conductivity, their energy storage capacity is low. Here we proposed a method to see the effect on ionic conductivity after mixing two ionic liquids from measured diffusion coefficient using Pulsed field gradient (PFG)-NMR and Relaxation NMR. Further, the study of the effect of ionic liquids on insulin fibril formation and also study of the change in the behavior of ionic liquid in a confined environment such as inside carbon nanotube will be studied.