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Ionic Liquids as High Performance Lubricant: A New Alternative to Oil

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Ionic Liquids (ILs) have become popular in recent times due to their wide application ranges starting from green solvent to as a whole new ionic material. In recent times, we have observed dramatically increased interest in the lubrication and anti-wear capabilities of ILs as compared with general lubrication oils in the field of tribology. Unlike conventional lubrication oils where it is difficult to adapt/modify them to specific functions, the design of innovative ILs to achieve various task-specific functions can be easily realized. Electrical conduction is another most distinctive characteristic that distinguishes ILs from conventional lubricants. In certain tribological applications, both lubrication and electrical conduction are required and ionic liquids can play a greater role there.

In this conference, we shall emphasis on how high flexibility of molecular design of ionic liquids can tune its properties which can be used for favorable applications like using both as neat lubricant or as well as efficient additive in oil for lubrication. We shall discuss synthesis, characterizations, structural and thermal studies of various types of designers ILs (both halogen and biodegradable non-halogen ion based) which can act as superior high-performance lubricating agent compared to other conventional engine oils.

Biography:

Satyen Saha was born in Kolkata and he received his B.Sc. and M.Sc. Chemistry in 1996 from Jadavpur University, Kolkata. He did his Ph.D. (Photochemistry) in 2002 from Hyderabad Central University, India. Subsequently he moved to Department of Chemistry, University of Tokyo, Tokyo for post-doctoral research (2002–2005) followed by post-doctoral research work in Georgetown University, Washington DC, USA. He was the recipient of JSPS post-doctoral and JSPS Bridge fellowships for the foreign researcher. At present he is an Associate Professor in Physical Chemistry, in department of Chemistry, Institute of Science, Banaras Hindu University (central university), Varanasi, India.