Cleaning Properties of Ionic Liquids

Ivan Ivanov, Borislav Soklev, Stoyan Karakashev, Radomir Slavchov and Boryan Radoev
University of Sofia, Faculty of Chemistry. Department of Physical Chemistry, 1164 Sofia, Bulgaria, E-mail: {HYPERLINK "http://mail40.abv.bg/app/j/contact_preview.jsp?cid=43725508&gid=10"}

The ionic liquids (IL) are salts, which are liquids at room temperature, composed by ionic pairs – organic ions with positive and negative charges. These liquids reveal many useful properties. One of them is their cleaning capacity. Our preliminary observations have shown that in general, by rolling off on inclined solid surfaces, IL droplets collect inside all impurities along its road, leaving no microscopic visible traces behind itself.

Taking into account that ILs are powerful solvents it can be supposed that the cleaning action will include removing of greasy spots. The poster includes experimental results of wetting dynamics of well defined (on the degree of hydrophobicity and profile) solid surfaces: rate of three phase contact line as a function of dynamic contact angles, fits of those results with most popular models and qualitative and quantitative conclusions for the wetting mechanism [1]. There is a comparison with similar data of water (pure and surfactant solutions droplets at the same conditions). An important cleaning characteristic is the stability of the wetting film (on the solid surface). The poster shows data for kinetics of IL foam film thinning (film thickness vs. time), as well as data of the so-called critical thickness of rupture of IL films.

Legend:
black – Reynolds
blue – experimental data obtained in Scheludko’s cell [2]