

Ionic Liquid Surface Science

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Surfaces and surface chemical reactions can be studied in detail using X-ray photoelectron spectroscopy. From the binding energies of the investigated core levels, detailed information on the chemical composition and chemical state (e.g. oxidation state) can be derived. Based on the understanding obtained for simple adsorbate systems, nowadays complex molecular systems are studied in great detail. Recently, these studies have been expanded to ionic liquids (ILs), which due to their low vapour pressure can be investigated in an ultrahigh vacuum environment. From angle-resolved XPS measurements detailed information on the surface composition of non-functionalized and functionalized ILs, on segregation and enrichment effects, on the dissolution and reactivity of catalytically active metal complexes in ILs, on the growth of ultrathin IL-layers, and even on liquid phase reactions studied in situ in the IL, can be derived. Various examples will be discussed.

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