# INVESTIGATING THE MODEL ELECTRODE | IL ELECTROLYTE INTERFACE

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Ionic liquids (ILs) have established their significance due to their numerous present and possible future applications in novel energy storage and conversion devices [1]. ILs are also of fundamental interest due to their composition of ions, tunability and lack of neutral solvent, which lead to interesting phenomena such as the overscreening of the electrode's charge and layered interfacial structure [2,3]. Currently, the focus has been mainly on the characterization of pure ILs interfacial behaviour, while the adsorption of organic molecules from IL electrolytes has attracted significantly less attention.

Using *in situ* scanning tunnelling microscopy, electrochemical impedance spectroscopy as well as computer simulations, we have studied the properties and structure of electrode | IL electrolyte in the case of C[4,5], Sb(111)[6], and Cd(0001)[7] model electrodes. The combination of both experimental and computational techniques has allowed us to: study the capacitance-structure relationship by relating the characteristic peaks to the reorganization of the IL layers, obtain insight into the interplay between different interactions, leading to the formation of organic bipyridine adlayers, and highlight the differences in aqueous and IL electrolyte interfacial behaviour.

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