

Electrocapillary Curves for the Hg/Ionic Liquid Interface

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Electrocapillary curves (surface tension γ as a function of the electrode potential E) for a series of room-temperature ionic liquids (RTILs) were measured using a mercury dropping electrode with the drop-weight (drop-volume) technique. The curves $\gamma = f(E)$ for the Hg/RTIL interface have one maximum and may be approximated with a polynomial of sixth-order. There are no ‘humps’ in the curves. The interfacial tension of the Hg/RTIL system changes with potential E in a monotonic way. The second derivative of $\gamma = f(E)$ leads to a polynomial of fourth order, indicating the capacitance of the Hg/RTIL interface. The potential of zero charge is within a relatively narrow range. The specific capacitance at the minimum is of the order $10 \mu\text{F}/\text{cm}^2$.

Key words: Ionic Liquid; Electrocapillary Curve.