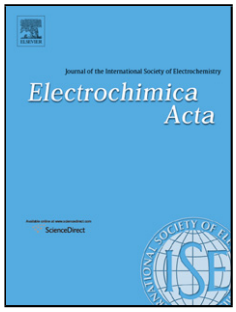

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Interfacial capacitance of graphene: correlated differential capacitance and *in-situ* electrochemical Raman spectroscopy study

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Abstract

The origin of the low interfacial capacitance of carbon-based materials is a long standing puzzle. The space charge capacitance and the quantum capacitance models have been proposed to interpret the phenomena. However, the physical origin of the capacitance is still unclear. In this study, we performed the differential capacitance and *in-situ* electrochemical Raman spectroscopic measurement of single layer graphene in aqueous solutions to study the origin of the interfacial capacitance of graphene. The capacitance was found to have a minimum value of ~4.5 μF cm^{-2} in