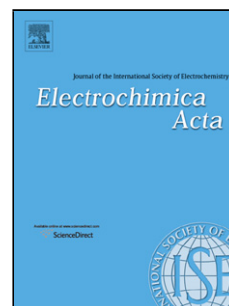


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Author: Jin-Hui Zhong Jun-Yang Liu Qiongyu Li Mian-Gang Li Zhi-Cong Zeng Shu Hu De-Yin Wu Weiwei Cai Bin Ren
ISE member



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

Jin-Hui Zhong^a, Jun-Yang Liu^a, Qiongyu Li^b, Mian-Gang Li^a, Zhi-Cong Zeng^a, Shu Hu^a, De-Yin Wu^a, Weiwei Cai^{c,*}, Bin Ren^{a,1,*}

^aState Key Laboratory of Physical Chemistry of Solid Surfaces and Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, China

^bDepartment of Physics, Laboratory of Nanoscale Condense Matter Physics, Xiamen University, Xiamen 361005, China.

^cDepartment of Physics, Laboratory of Nanoscale Condense Matter Physics, State Key Laboratory of Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen 361005, China.

¹ISE member

Corresponding authors: wwcai@xmu.edu.cn (W. Cai), bren@xmu.edu.cn (B. Ren)

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 $\sim 4.5 \mu\text{F cm}^{-2}$ in

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