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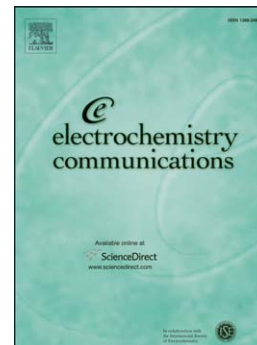
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Using sp^2 -C dominant porous carbon sub-micrometer spheres as solid transducers in ion-selective electrodes

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Abstract

Potential stability is one of the most intractable challenges for solid-contact ion-selective electrodes (SC-ISEs) with regard to the classic inner-reference ISEs. Among the well-established electrode structures for SC-ISEs, solid-contact transducer layer is the most crucial component. Herein, we introduce porous carbon sub-micrometer spheres (PC-SMSs) as a promising solid-contact material for fabrication of highly stable K^+ -SC-ISE. Systematic characterizations including contact angle, electrochemical impedance spectroscopy and cyclic voltammetry demonstrate that the PC-SMSs disclose high hydrophobicity and large interfacial capacitance, which efficiently eliminate the water-layer and stabilize the potential of K^+ -SC-ISEs. The developed PC-SMSs electrode also exhibits good long-term stability as well as anti-interferences from O_2 and CO_2 .

Keywords: Solid-contact ISEs, Transducers, Porous carbon sub-micrometer spheres, Potential stability.

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