Access resistance in ion transport through graphene nanopores[1]

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— The effect of the bulk electrolyte on the measured resistance of a nanopore has been a long-standing challenge. Typically, this effect is referred to as the access resistance and – under certain strict assumptions regarding the potential and the geometry – depends only on the pore radius. Simulations are often employed to compare the resistance of different ion types, protein configurations, or pore geometries. We demonstrate that there is a bulk contribution within the sizes accessible with simulations. We show how to make use of the standard series resistance formula to extract the pore resistance (that includes both the pore and the access resistance). These results shed light on common assumptions used in computing access resistance, as well as on the proper simulation of ion transport.

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Date submitted: 10 Nov 2016   Electronic form version 1.4