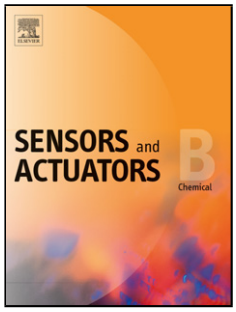

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Equivalent electric circuits for chemical sensors in the Langmuir regime

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Abstract

This paper presents an equivalent electric circuit model that describes adsorption-desorption processes occurring on bio and chemical sensor surfaces under the Langmuir hypothesis and considers the following practical case: the pressure or concentration of the particles in the test chamber is not perturbed by these processes and keeps its initial value, as in the cases of relatively high pressure or concentration values with zero molecular flow, or in the presence of a molecular flow at any pressure or concentration value. It is also pointed out that the equivalent circuit for Langmuir adsorption is similar to the circuit proposed for enzymatic reactions. Even if this work essentially covers theoretic aspects, a way is suggested for the possible experimental determination of both adsorption-desorption parameters and adsorption-desorption site density.

Keywords:

Chemical sensors. Adsorption processes. Desorption processes. Equivalent electric circuit. Adsorption site density.