

Solid-Contact Potentiometric Sensor Based on Polyaniline and Unsubstituted Pillar[5]Arene

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Abstract

© 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim. A novel potentiometric sensor based on screen-printed carbon electrode covered with electropolymerized polyaniline (PANI) and unsubstituted pillar[5]arene as ionophore has been developed and tested in potentiometric measurements of pH and metal ions. The introduction of pillar[5]arene improved the reversibility of the pH response in the range from 2.0 to 9.0 with the slope of 45mV/pH. Among metal cations, the response to Fe^{3+} and Ag^{+} ions was referred to PANI redox conversion whereas the signal toward Cu^{2+} in the range from 1.0×10^{-6} to 1.0×10^{-2} M (limit of detection (LOD) 3.0×10^{-7} M) to specific interaction with the macrocycle.

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Keywords

Electropolymerization, Pillar[5]arene, Polyaniline, Potentiometric sensor, Solid-contact sensor