



Synthesis polypyrrole doped with hydroquinone monosulfonate as a pH sensor for flow injection potentiometric titration

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A mini flow cell acrylic unit was designed for preparation of polypyrrole electrode and subsequent flow injection potentiometric titration. A teflonized stainless steel rod, fitted in the flow cell, acted as supporting electrode for the electrochemical polymerization of the hydroquinone monosulfonate-doped polypyrrole (PPyHQS). Potentiometric pH measurement of the PPyHQS sensor versus Ag/AgCl reference electrode showed a response slope of -46.03 mV/pH ($r^2=0.996$) with a linear working range of pH 2 to 12. The PPyHQS sensor synthesized by the proposed method has good reproducibility and repeatability with standard deviation of 0.69 and 0.97, respectively. The pH measurement by PPyHQS in flow cell unit compared with batch system gave similar results. Furthermore, the potentiometric titration of real samples was investigated in the flow injection system by using the PPyHQS electrode did not show a significantly different from the glass pH electrode.

Keywords: PPy-HQS sensor, pH sensor, flow injection, potentiometric titration