chemosensors

MDPI

Supplementary data

Fabrication of An All-Solid-State Ammonium Paper Electrode Using A Graphite-Polyvinyl Butyral Transducer Layer

Irena Ivanišević *, Stjepan Milardović †, Antonia Ressler and Petar Kassal *

Faculty of Chemical Engineering and Technology, University of Zagreb, Marulićev trg 19, 10000 Zagreb, Croatia; smilard@fkit.hr (S.M.); aressler@fkit.hr (A.R.)

* Correspondence: ivanisevic@fkit.hr (I.I.), pkassal@fkit.hr (P.K.)

† This author passed away before submission of this manuscript.

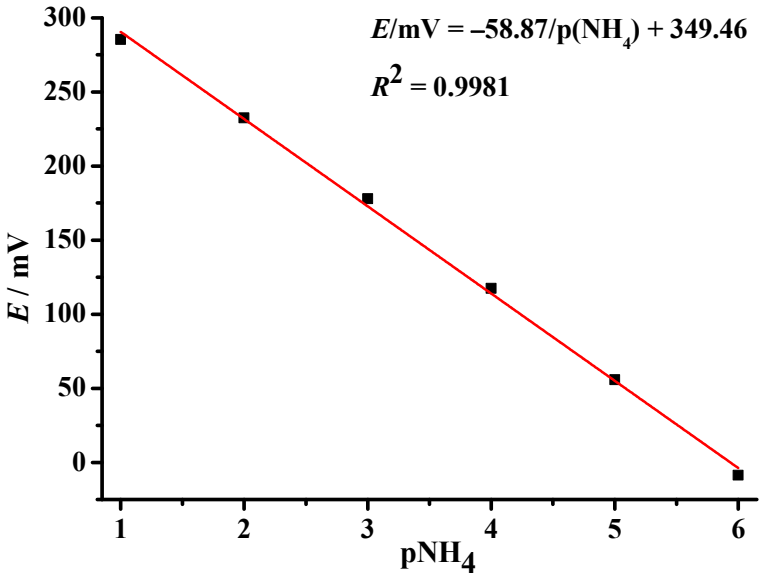


Figure S1. Calibration curve of the conventional ammonium ion-selective electrode immersed in 10^{-6} – 10^{-1} M NH_4Cl solutions.

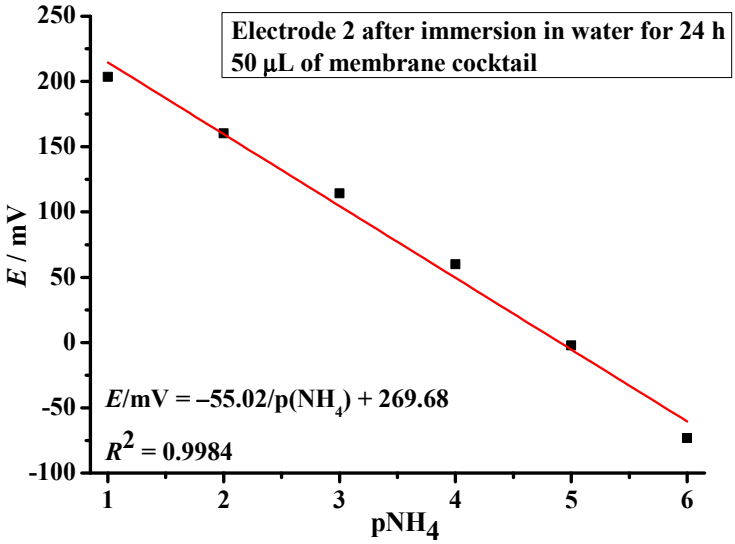


Figure S2. Calibration curve of the graphite disc electrode coated with 50 µL of ammonium membrane mixture. Measurements were performed in 10^{-6} – 10^{-1} M NH_4Cl solutions after immersion of the prepared sensor in water for 24 h.

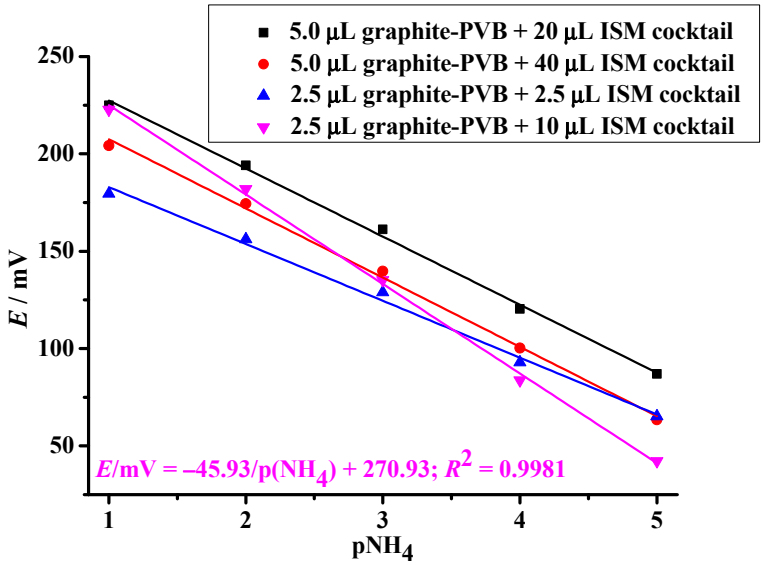
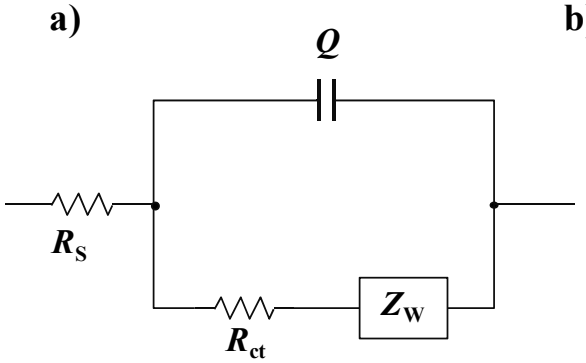


Figure S3. Optimization of the sensor parameters. Linear range of ammonium-selective ISE prepared with various amounts of graphite-PVB (50 wt %) transducer formulation layered over a graphite disc electrode and different volumes of membrane mixture. The measurements were performed in the same solutions as in the previous Figure.

a)



b)

graphite(65 wt %)-PVB/graphite electrode	
R_s (Ω·cm^2)	223
R_{ct} (Ω·cm^2)	7805
Z_W (S·s^n/cm^2)	1.36×10^{-3}
Q (S·s^5/cm^2)	6.06×10^{-5}
Chi squared (χ^2)	1.47×10^{-3}

Figure S4. R(Q(RW)) circuit for simulation of impedance spectra **(a)** and results of circuit modeling **(b)** of graphite(65 wt %)-PVB coated graphite electrode using *ZSimpWin* simulation programme. R_s – solution resistance, R_{ct} – charge transfer resistance, Z_W – Warburg impedance, Q – constant phase element.