

Figure 1: Scheme of a screen-printed electrode.

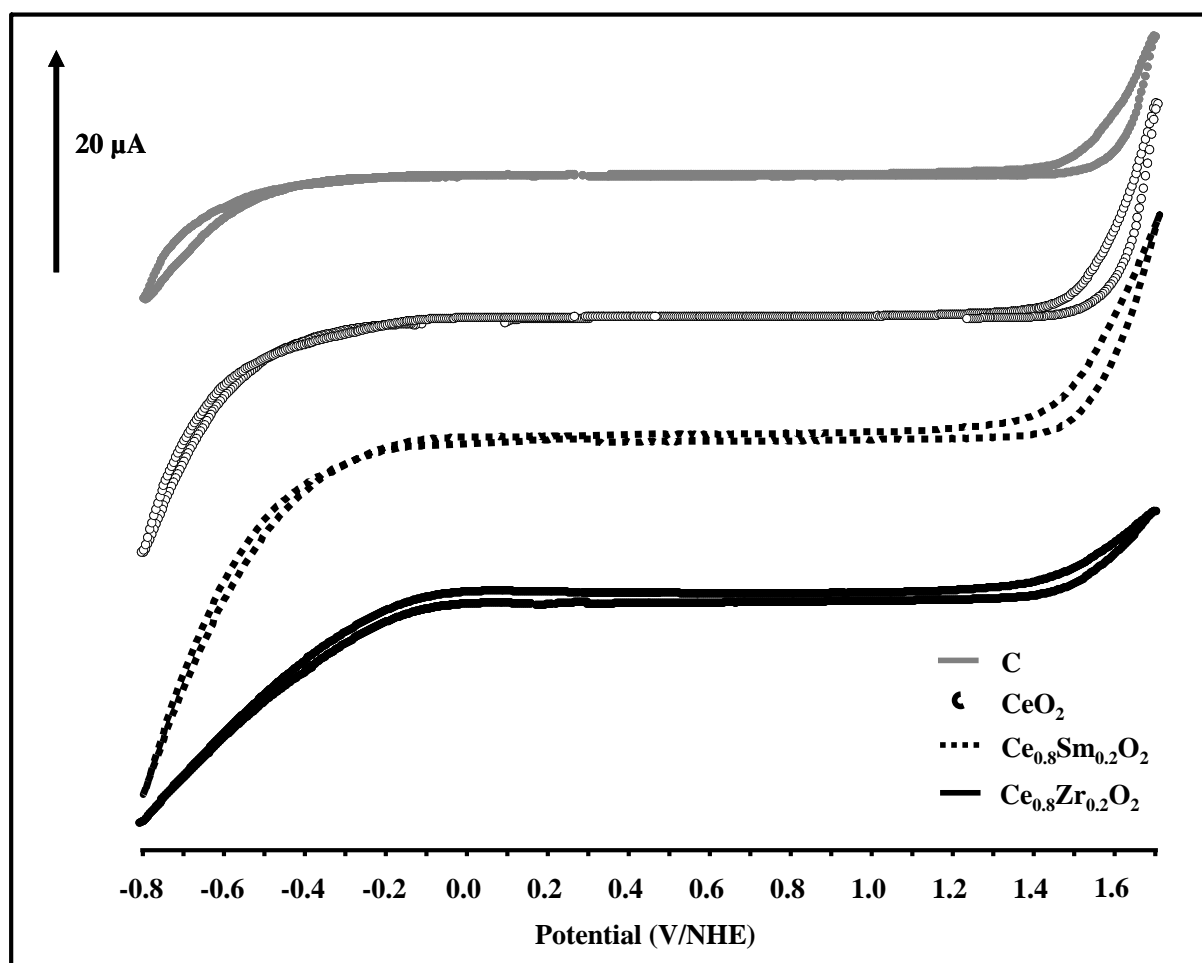


Figure 2: C-, CeO_2 -, $\text{Ce}_{0.8}\text{Sm}_{0.2}\text{O}_2$ - and $\text{Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ -based SPEs cyclic voltammograms recorded in NaCl 0.1 mol L^{-1} . Experimental conditions: CV between -0.8V/NHE and $+1.7\text{V/NHE}$. Scan rate: 0.05 V s^{-1} , 5 electrodes.

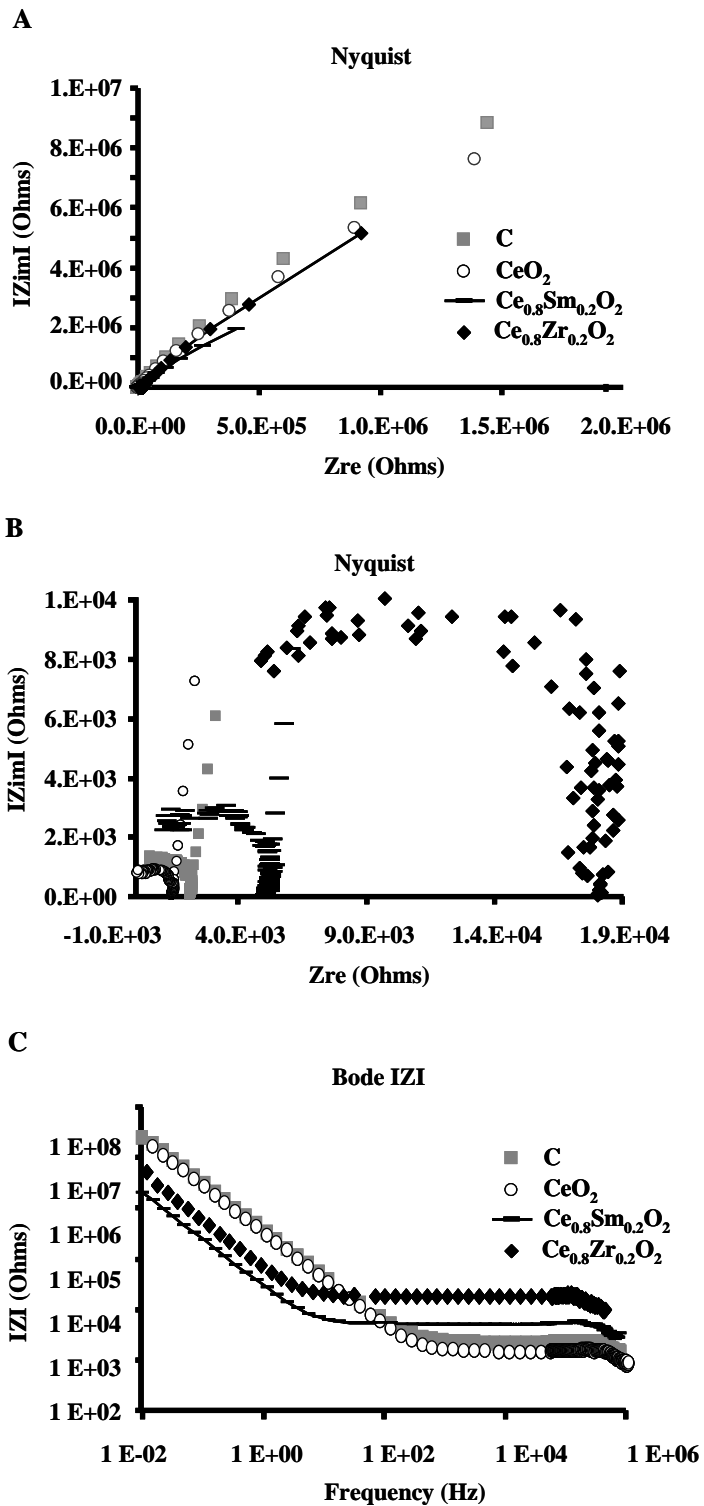


Figure 3: A: EIS diagrams in Nyquist mode, B: EIS diagrams in Nyquist mode with magnification, C: EIS diagrams in Bode mode, obtained with C- and CeO₂-based SPEs in aerated NaCl 0.1 mol L⁻¹. Experimental conditions: frequency range 10 Hz -1 MHz at +0.7V/NHE, 5 electrodes.

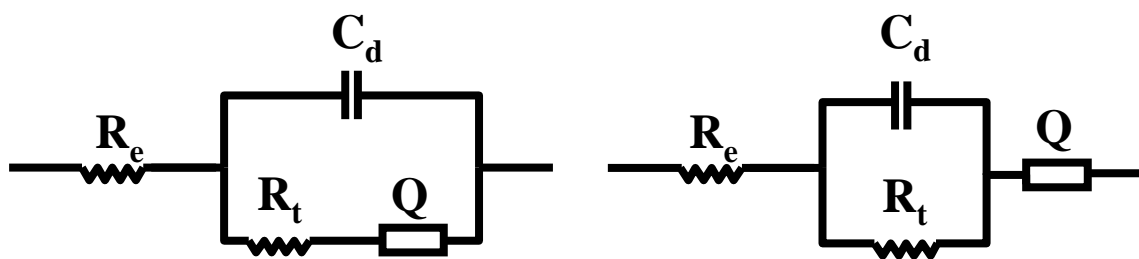


Figure 4: Two indiscernible electrical equivalent circuits obtained from EIS diagram conducted with C- and CeO_2 -based SPEs in NaCl (0.1 mol L^{-1}). Experimental conditions: frequency range 10 Hz -1 MHz at + 0.7V/NHE, 5 electrodes.

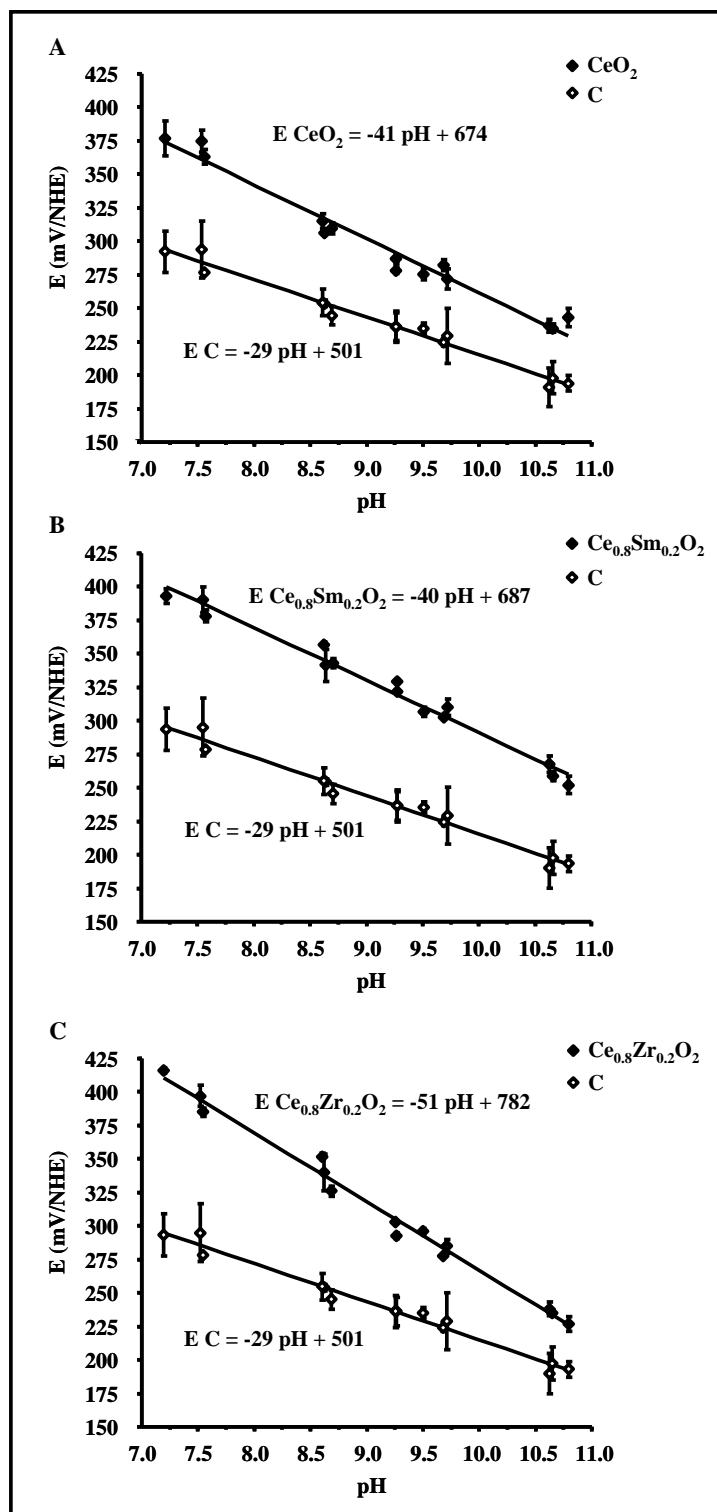


Figure 5: Comparison between C- and (A) CeO_2 -, (B) $\text{Ce}_{0.8}\text{Sm}_{0.2}\text{O}_2$ - and (C) $\text{Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ - based SPEs potential (mV/NHE) versus pH in $\text{NH}_4\text{Cl}/\text{NH}_3$ buffer solutions at 25°C .

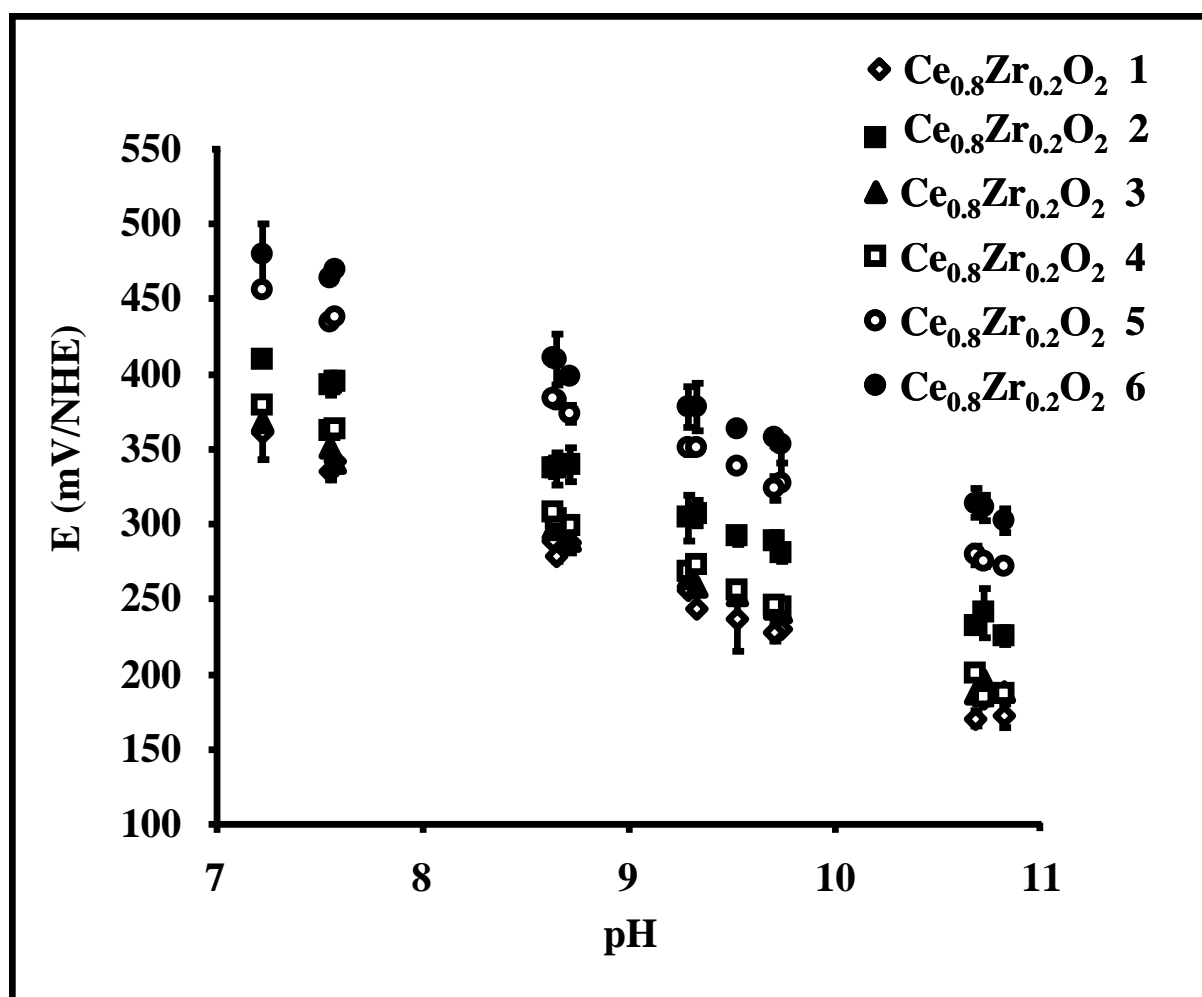


Figure 6: Typical calibration curves obtained in $\text{NH}_4\text{Cl}/\text{NH}_3$ buffer solutions with $\text{Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ -based SPEs at 25°C ($n = 6$ electrodes).

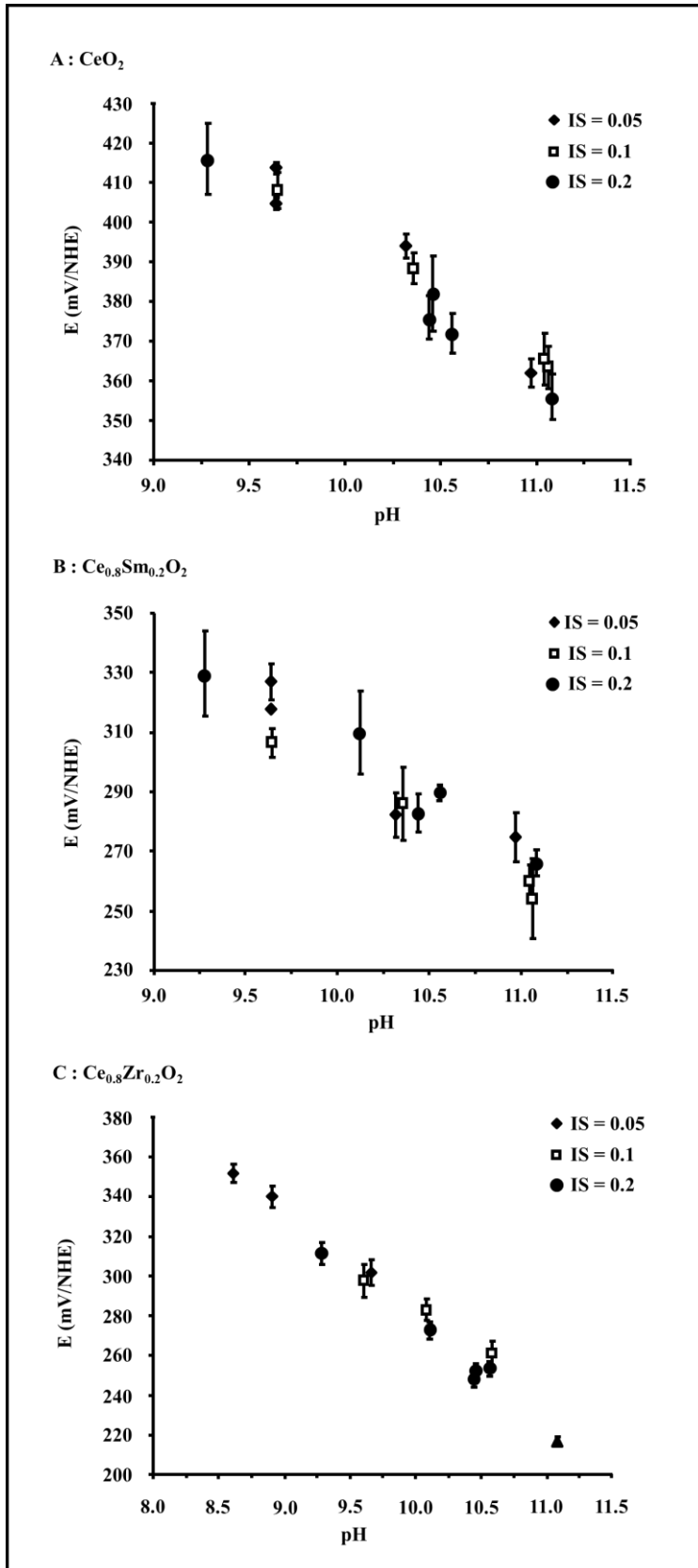


Figure 7: Evolution of CeO₂-based SPEs potential (mV/NHE) according to pH as well as ionic strength. NaHCO₃/Na₂CO₃ buffer solutions.

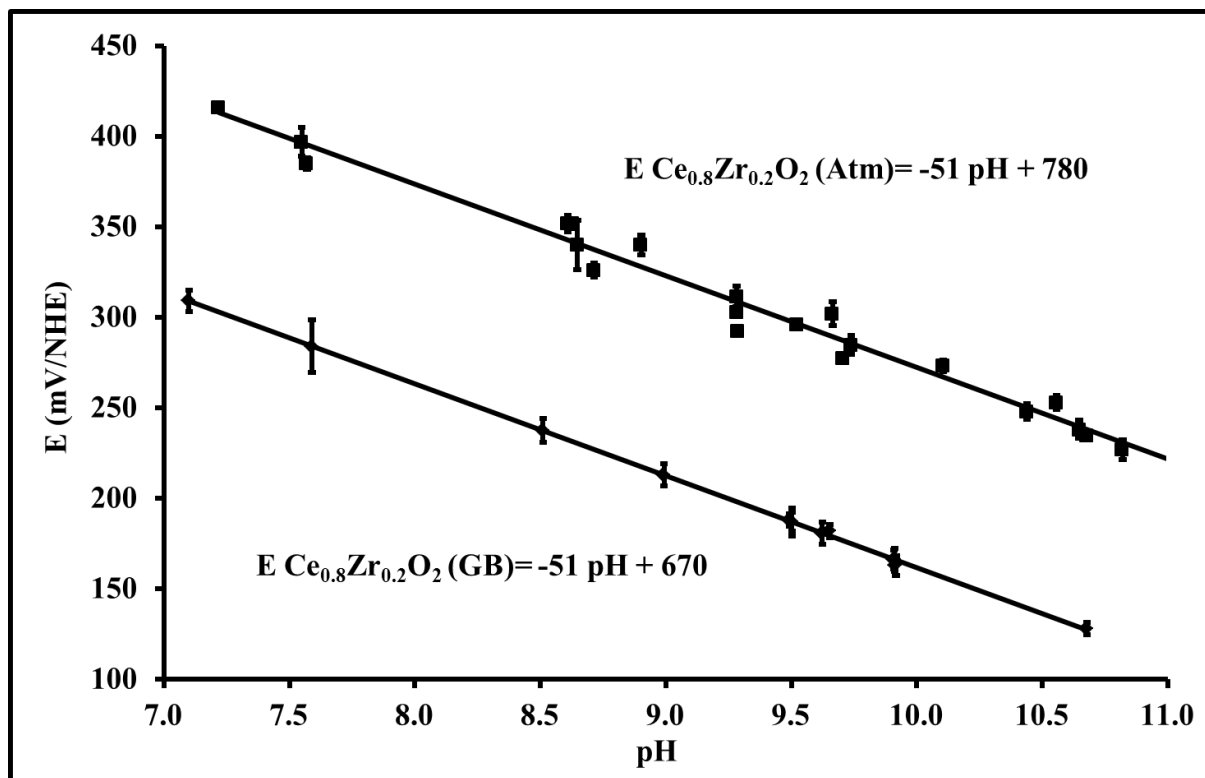


Figure 8: $\text{Ce}_{0.8}\text{Zr}_{0.2}\text{O}_2$ -based SPEs calibration curve obtained at 25°C under atmospheric oxygen saturation (Atm) and anoxic conditions carried out in a glove box (GB). Data include measurements conducted in $\text{NH}_4\text{Cl}/\text{NH}_3$ and $\text{NaHCO}_3/\text{Na}_2\text{CO}_3$ buffer solutions.

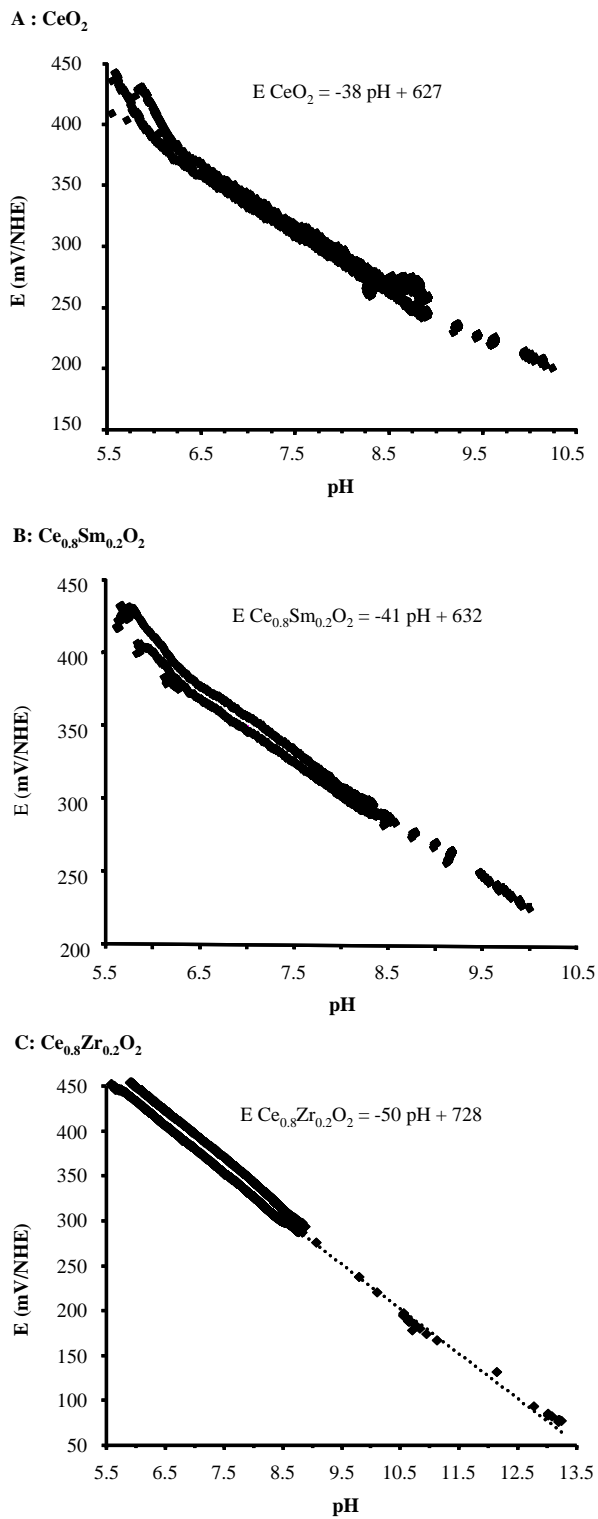


Figure 9: Potential response of CeO₂-, Ce_{0.8}Sm_{0.2}O₂- and Ce_{0.8}Zr_{0.2}O₂-based SPEs obtained at 25°C in continuous pH values in NaCl (0.1 mol L⁻¹) spiked with a NaHCO₃/Na₂CO₃ buffer (pH 10.5, ionic strength 0.2). The experiment was extended to pH 13.2 with NaOH (1 mol L⁻¹) for Ce_{0.8}Zr_{0.2}O₂-based SPEs.