Pd-based electrocatalysts prepared by borohydride reduction method for methanol and ethanol electro-oxidation in alkaline medium

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Resumo:
Pd/C, Au/C, AuBi/C, PdAu/C, PdAuBi/C electrocatalysts (with different atomic ratios and 20 wt% of metal loading) were prepared by borohydride reduction method using a water/2-propanol mixture as solvent, Pd(NO3)2.2H2O, HAuCl4.3H2O and Bi(NO3)3.5H2O as metal sources, carbon black Vulcan XC72 as support and NaBH4 as reducing agent. The activities of the prepared electrocatalysts for methanol and ethanol electro-oxidation were investigated by chronoamperometry using the thin porous coating technique. Electrochemical experiments showed that the PdAu/C (50:50) and PdAuBi/C (50:45:05) electrocatalysts have the higher electroactivity for methanol electro-oxidation, while the PdAu/C (50:50) electrocatalyst has the higher electroactivity for ethanol.