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Titel des Beitrags:
Surface (electro-)chemistry on Pt(111) modified by a Pseudomorphic Pd monolayer

Abstract:
The formic acid and methanol oxidn. reaction are studied on Pt(1 1 1) modified by a pseudomorphic Pd monolayer (denoted hereafter as the Pt(1 1 1)-Pd1 ML system) in 0.1 M HClO4 soln. The results are compared to the bare Pt(1 1 1) surface. The nature of adsorbed intermediates (COad) and the electrocatalytic properties (the onset of CO2 formation) were studied by FTIR spectroscopy. The results show that Pd has a unique catalytic activity for HCOOH oxidn., with Pd surface atoms being about four times more active than Pt surface atoms at 0.4 V. FTIR spectra reveal that on Pt atoms adsorbed CO is produced from dehydration of HCOOH, whereas no CO adsorbed on Pd can be detected although a high prodn. rate of CO2 is obsd. at low potentials. This indicates that the reaction can proceed on Pd at low potentials without the typical "poison" formation. In contrast to its high activity for formic acid oxidn., the Pd film is completely inactive for methanol oxidn. The FTIR spectra show that neither adsorbed CO is formed on the Pd sites nor significant amts. of CO2 are produced during the electrooxidn. of methanol. [on SciFinder(R)]

Stichworte:
Oxidation (surface surface electrochem. oxidn. of formic acid and methanol on palladium-modified platinum) surface electrochem oxidn formic acid methanol palladium modified platinum
Kongresstitel: CAN 142:163278 66-4 Surface Chemistry and Colloids Materials Science Division, Lawrence Berkeley National Laboratory, University of California, Berkeley, CA, USA. Journal 0039-6028 7440-06-4 (Platinum) Role: CPS (Chemical process), NUU (Other use, unclassified), PEP (Physical, engineering or chemical process), PROC (Process), USES (Uses) (palladium modified; surface electrochem. oxidn. of formic acid and methanol on palladium-modified platinum); 64-18-6 (Formic acid); 67-56-1 (Methanol) Role: CPS (Chemical process), PEP (Physical, engineering or chemical process), PROC (Process) (surface electrochem. oxidn. of formic acid and methanol on palladium-modified platinum)


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