

Dynamic instabilities in electrocatalysis and their impact on reaction efficiencies

Katharina Krischer

Physics Department E19, Technische Universität München, Germany

CO is a well known poison for electrocatalytic reactions on Pt electrodes. It might be present as contamination of the educt feed, as e.g. in the H₂-feed to a fuel cell, or form as a reaction intermediate during the electrooxidation of organic species, such as methanol. The presence of CO also promotes dynamic instabilities and thus renders homogeneous, stationary operation conditions unstable.

We present theoretical and experimental results on instabilities and pattern formation in CO|Pt and H₂,CO|Pt-systems and discuss strategies how the dynamic instabilities can be exploited to minimize the poisoning effect of CO, in particular, how to minimize the voltage loss at the anode of a fuel cell when fed with CO contaminated H₂ gas.