Abstract

Electrochemical processes are widely studied because of their importance in a multitude of industrial activities. In order to remain competitive, product innovation and a continuous search for new products are primordial. This requires a profound insight in the electrochemical phenomena which can only be obtained by modelling the electrochemical processes in an accurate and reliable way. Reliable modelling results are only provided when correct experimental data are available and when it can be evaluated whether the model is able to describe the experiments within the experimental error. To tackle this problem, this work integrates those two elements in an identification approach.

The developed identification approach is implemented for a well-defined selection of electrochemical systems, each characteristic for a different physical process. It is however not limited to the case studies considered in this work but can be used for other electrochemical processes. It is a prerequisite for every quantitative electrochemical study. Moreover, it will provide accurate modelling results and will contribute to the understanding of technologically relevant electrochemical reactions which is indispensable for optimizing existing industrial processes.