

Application of solid electrolyte gas sensors based on YSZ for dynamic electrochemical measurements

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Zusammenfassung

Electrochemical solid electrolyte sensors are nowadays frequently used to control and monitor combustion processes. Probably the best-known example is the lambda sensor, which is installed in the exhaust gas of automobiles. Since such sensors are usually operated at high temperatures statically. The sensors usually measure the oxygen equilibrium partial pressure, which illustrates the stoichiometry of combustion. In this work, however, dynamic methods are used on the commercially available measuring system with YSZ solid electrolyte and Pt electrodes. The question is whether selective detection of reducing components such as carbon monoxide, hydrogen or nitrogen oxides in gas mixtures is also possible at operating temperatures at which gas equilibrium normally occurs. Dynamic methods such as cyclic voltammetry, square-wave voltammetry, electrochemical impedance spectroscopy and pulsed polarization have been applied. The focus was always on the question of what information can be obtained from measuring curves with different gas sampling.

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