

gas sensing electrode

A sensor composed of an indicator and a reference electrode in contact with a thin film of solution which is separated from the bulk of the sample solution by a gas-permeable membrane or an air gap. This intermediate solution interacts with the gaseous species (penetrated through the membrane or an air gap) in such a way as to produce a change in a measured constituent (e.g. the H^+ activity) of the intermediate solution. This change is then sensed by the *ion-selective electrode* and is related to the partial pressure of the gaseous species in the sample. [Note: In electrochemical literature the term gas electrode is used for the classical, redox-equilibrium-based gas electrodes as well, such as the hydrogen or the chlorine gas electrodes ($\text{Pt(s)}|\text{H}_2(\text{g})|\text{H}^+(\text{aq})$ or $\text{Pt(s)}|\text{Cl}_2(\text{g})|\text{Cl}^-(\text{aq})$). These electrodes respond both to the partial pressure of the gas (H_2 or Cl_2) and to the ionic activities (H^+ or Cl^-). The Clark oxygen electrode fits under this classification although, in contrast to other gas sensors, it is an amperometric and not a potentiometric device.

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