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Solid State Electrochemical Gas Sensor for the Quantitative Determination of Carbon Dioxide

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Research Highlights

- A novel solid state electrochemical carbon dioxide gas sensor has been developed
- The sensor has a modular design and contains ceramic and salt-type ion conductors
- The sensor provides the thermodynamically expected cell voltage
- The sensor has a response time of seconds to minutes
- The sensor remains operational and drift-free for several weeks

Abstract

A novel solid state electrochemical sensor is presented that enables the quantitative measurement of CO₂ gas in atmospheres of CO₂ and O₂ in inert gas. The sensor consists of a measuring electrode based on Na₂CO₃, a series combination of solid ion conductors comprising a ceramic-type component of Na-β/β"-alumina and a salt-type component of Na₂SO₄, as well as a reference electrode of glass-sealed

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