

ELECTRODE REACTIONS OF CO AND CO₂ IN MOLTEN CARBONATES

Alina Borucka

Cambridge University, Cambridge, England

ABSTRACT

Experiments have been made on the electrochemical reactions of CO/CO₂ gas mixtures at gold electrodes in molten ternary eutectic of lithium, sodium and potassium carbonates at temperatures up to 900°C. At zero applied current, the electrode potential depends on the partial pressures of CO and CO₂ according to the Nernst equation for the reaction: $\text{CO} + \text{CO}_3^{--2} = 2\text{CO}_2 + 2\text{e}^-$. Anodic current/potential relationships have been studied up to polarizations of 500 mV; similar measurements in the cathodic range have been made within the limits set by the Boudouard reaction.