

# Electrochemical Synthesis of $\text{Mo}_2\text{C}$ Catalytical Coatings for the Water-Gas Shift Reaction

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The electroreduction of  $\text{CO}_3^{2-}$  ions on a molybdenum cathode in a  $\text{NaCl-KCl-Li}_2\text{CO}_3$  melt was studied by cyclic voltammetry. The electrochemical synthesis of  $\text{Mo}_2\text{C}$  on molybdenum substrates has been performed at 1123 K for 7 h with a cathodic current density of  $5 \text{ mA cm}^{-2}$ . If molybdenum carbide is present as a thin (ca. 500 nm) film on a molybdenum substrate ( $\text{Mo}_2\text{C}/\text{Mo}$ ), its catalytic activity in the water gas-shift reaction is enhanced by at least an order of magnitude compared to that of the bulk  $\text{Mo}_2\text{C}$  phase.

*Key words:* Cyclic Voltammetry; Electrode Processes; Electrochemical Synthesis; Water-Gas Shift Reaction; Catalytic Activity.