

Oxygen permeability of Cu-containing CO₂-tolerant dual-phase membrane

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High oxygen permeability and structural stability are required in the presence of high concentrations of CO₂ for application of oxygen transport membrane in the oxy-fuel combustion process. Cu-containing dual-phase membranes were prepared with one-pot method and citric acid sol-gel process. After calcination of the powder, the dual-phase membranes were prepared by uniaxially pressing the powder. The dual-phase membranes were sintered at high temperature. The phase structures and the microstructures of the membranes were characterized by XRD, SEM analysis. The oxygen permeation fluxes of Cu-containing dual-phase membranes were evaluated with CO₂ as the sweep gas. The long-term CO₂ stability of membrane was studied for more than 200 h.