

Syngas production characteristics of H₂O-CO₂ coelectrolysis in SOEC cell

임택형[†], 송락현¹, 박석주¹, 이승복¹,
홍종은¹, 김혜성¹, 조동우¹
한국에너지기술연구원; ¹KIER
(ddak@kier.re.kr[†])

Steam-carbon dioxide electrochemical conversion in solid oxide electrolysis cells (SOECs) is one of the efficient ways to reduce CO₂ emission and to simultaneously store the renewable power. In this study, H₂O-CO₂ coelectrolysis performance and syngas synthesis in solid oxide electrolysis tubular cells at different operating temperature (700–850 °C) is tested. The results indicated that the coelectrolysis performance for Ni-YSZ/YSZ/LSM-YSZ electrolysis cell increases significantly with operating temperature. In addition, syngas yield was analyzed with various operating conditions such as the reaction composition, total flow rate, current density, and so on. Also, the pressurized coelectrolysis module system which is configured on the tubular SOEC cells is being developed.