

Methanol-reforming Membrane Reactors with Porous Membranes

의동욱, 유창열, 이규호*
한국화학연구원 환경에너지연구센터
(khlee@kriect.re.kr*)

When a methanol reforming-membrane reactor is employed as a hydrogen generator for proton exchange membrane fuel cell (PEMFC), three important aims should be simultaneously achieved in one process, which are methanol conversion improvement, high hydrogen recovery, and high CO removal efficiency. To achieve the aims, we investigated five different configurations of a membrane reactor (a methanol reforming-microporous membrane (MMi) reactor, methanol reforming-mesoporous membrane (MMe) reactor, methanol reforming-mesoporous membrane-water gas shift (MMeW) reactor, methanol reforming-macroporous membrane (MMA) reactor and methanol reforming-macroporous membrane-water gas shift (MMAW) reactor). As a result, the MMeW and MMAW reactor gave simultaneously methanol conversion improvement, high hydrogen recovery, and high CO removal efficiency in one process.