The study of Pd-Cu-Ni ternary alloy membrane deposited on a polishing treated PNS

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In this study, We used a porous nickel support that has enlarged pore size distribution and increased gas permeation flux compared with previous one. The surface pore size of the porous nickel support was reduced by polishing process with sandpaper followed by wet polishing with alumina powder. The polishing process significantly reduced surface roughness and almost plugged pores of the porous nickel support. A 12 ㎛ thick defect-free Pd-Cu-Ni ternary alloy film could be formed on the modified porous nickel support with polishing process and the plugged pores by polishing process regenerated during Cu-reflow at 700℃ by nickel upward diffusion. Furthermore, we could obtain 2.9 times higher hydrogen permeation flux than the results of previous studies because of decreased support resistance.