

Fabrication and characterization of a nickel nano-filter for gas-solid separation

이신근, 박종수^{1,*}, 김성현, 조성호, 김동원², 김홍구², 최승훈³, 이춘부³, 홍성창²
고려대학교; ¹에너지기술연구원; ²경기대학교; ³서남대학교
(deodor@kier.re.kr*)

Nickel nano-filter was successfully made for gas-solid separation. We fabricated the nickel nano-filter with nickel powder having 2 to 10 μm of particle size distribution. The pressed Nickel nano-filter was treated at 450°C to have mechanical strength. It was clarified that the fabrication pressure is very important to air permeability and pressure drop. The air permeability of nickel nano-filter decreases with increasing fabrication pressure due to the decrease of the average pore diameter. Furthermore, the air permeability of the ones compressed under 80MPa and treated at 450°C in hydrogen condition, was much higher than that of commercial 0.2 μm 316L Stainless Steel of Mott corp.. The filtering test showed that they could separate particle from air down to 20 nm of particle size with 99.9% efficiency.