

하드애노다이제이션에 의한 나노다공질 양극산화 알루미늄 멤브레인의 제조

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Fast Fabrication of Nanoporous Anodic Alumina Membrane by Hard Anodization

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Abstract : Nanoporous anodic alumina membranes (NAAM) with high-density through-hole pores fabricated by hard anodization of aluminum in 0.3 M oxalic acid under the applied voltage of 40 (mild anodization), 80, 100, 120 and 140 V were investigated. The current-time responses monitored using a PC-controlled anodization cell and the corresponding pore structures attainable from field-enhanced scanning electron microscopy (FE-SEM) were analyzed in order to establish the optimum fabrication process. The nanoporous structure can be produced for all the voltage conditions, while the stabilized through-hole pore formation seems to occur at 40, 80 and 140 V. The growth rate under 140 V hard anodization was over 30 times higher than under 40 V mild anodization (1.5 $\mu\text{m/hr}$).

Key Words : hard anodization, nanoporous membrane, anodic alumina, oxalic acid