

# Highly ordered through-holes Porous alumina membranes for nanowires fabrication

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**Abstract:** Free-standing through-pores alumina membranes of 30–90  $\mu\text{m}$  thickness and  $70 \times 70$  mm size have been fabricated to deposit Ni–Fe nanowires by electrochemical processing. Ni–15%Fe nanowires were deposited locally into the membranes. Due to highly ordered microstructure of the membranes, the pores were filled by nanowires almost to 100%. The membrane nanowires composite morphology; structure and chemical features have been studied by scanning electron microscopy, X-ray structural analysis and X-ray energy-dispersive spectroscopy. The anomalous Fe deposition effect was observed at the initial stage of Ni–Fe composite deposition into narrow channels of

porous alumina. Furthermore, deposition process is being stabilized, and constant chemical composition nanowires are formed.

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