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
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## Preparation of Palladium Composite Membranes on Pore Structure Modified and Non-Modified Supports by Electroless Plating Procedure

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**Abstract:** The effects of pore structure of the support on the plating morphology, thickness, and composition were investigated in an electroless plating procedure. Some of the plating studies were carried out directly on commercially available porous glass supports, while others were performed on modified supports. Two modification steps with alumina were applied on tubular supports. Formation of a 60- $\mu$  m-thick layer on the modified support was detected by SEM analysis after the first 2 plating steps, while layer formation was not observed on the non-modified support. It was shown that the formation of a new layer started on the modified support, and a firm structure was obtained on the non-modified support after the fourth plating step. Pd film thickness was 100  $\mu$  m for plating on the modified support. From EDS analysis, the plating composition on the modified support was 0.52% Al, 1.56% Si, and 97.92% Pd, and it was 2.52% Al, 3.28% Si, and 94.20% Pd on the non-modified support after the fourth plating step. The highest differential gain value was 10.33 mg/cm<sup>2</sup> for the first plating on the modified support. The number of pores corresponding to the mesoporous region increased after the second plating and it decreased with subsequent plating steps for both supports. Pores with an average diameter of about 5500 nm were found in the structure following the fourth plating on the non-modified support, and pores with an average diameter of 800 nm were found basically in the structure after the fourth plating on the modified support.

**Key Words:** Electroless plating, palladium, composite membrane, support.

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