

## **Electrochemical growth of copper single crystals in pores of polymer ion-track membranes**

Dobrev D, Vetter J, Angert N, Neumann R

*APPLIED PHYSICS A- MATERIALS SCIENCE & PROCESSING 69 (1999) 233-237*

Copper single-crystals are grown by a galvanic method, using etched ion tracks in a polymer foil as templates. The copper deposition is carried out by reversible pulse electrolysis in an ultrasonic field. The method applied for this purpose permits fabrication of stable standing cylindrical single crystals with diameters in the nanometer and micrometer range with high aspect ratio and density of  $10^5$ – $10^7$  per  $\text{cm}^2$  on a large area. The experimental results obtained in this way are compared with the results obtained by direct current plating under ultrasonic treatment and sole reversible electrolysis. The effects of all these deposition processes on the structure of copper claddings are shown.