

Chapter 13

Using the Method of SEM Image Processing to Study the Morphology of Porous Anodic Alumina Films

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Abstract: Aluminum films approximately 100 nm thick were deposited on silicon substrates (SiO₂/Si) by thermal evaporation in vacuum. Porous anodic alumina films were obtained in a potentiostatic mode at 20 V in 0,3 M aqueous solution of oxalic acid and 1.8 M aqueous solution of sulfuric acid. The main pore diameter was determined using ImageJ software from SEM images. For that algorithm determining the pore diameter in porous anodic alumina films was developed. It is shown that for nanoporous alumina films formed in sulfuric acid at 20 V, the average pore diameter was 12.3 nm. In the case of oxalic acid electrolyte the nanoporous alumina films formed at 20 V had an average pore diameter of 14.8 nm.

Key words: Anodic alumina, surface morphology, pore diameter, SEM image.

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