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Abstract

The objective of the proposed study is to develop an automated tool to determine the effect of time on nanopore structures. The designed tool extracts the nanopores from the Al₂O₃ FESEM images and computes their geometrical and statistical features. These values are further used to measure the variance of wall thickness and nanopore size which depend on four prominent anodizing parameters, namely, concentration (%), time (min), temperature (°C) and voltage (V).

It is found that the structure and regularity of the nanopore arrangement is significantly improved by increasing anodizing time (min) at constant concentration (%), temperature (oC) and voltage (V). It is also observed that, after the anodizing process at every interval of time there is a significant decrease in wall thickness from 58nm to 41nm and increase in nanoporesize from 32nm to 78 nm. The experimental results are compared with the manual results obtained by the chemical expert and demonstrate the efficacy of the proposed method.

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Index Terms

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Keywords

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