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**TIN THIN FILM DEPOSITION BY PLASMA AND THE MORPHOLOGY ANALYSIS**

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This study used the surface modification technique, namely Cathodic Deposition Cage by plasma, for the production of thin films of titanium nitride (TiN) on silicon substrate (Si). In comparison with other techniques, it allows a deposition of material at lower temperatures which can eliminate some defects generated by the high temperature processes. It also allows the possibility of the deposition at three-dimensional structures with a high deposition rate. In this study were considered variables such as gas flow, temperature and the time of treatment, as agent which drive both deposition rates and the characteristics of the produced thin films. These variables can influence the quality of the deposited film and the morphology of the surface. Raman spectroscopy was used to indicate the phases present, and the energy dispersive X-ray spectroscopy (EDS) to identify the chemical composition of the deposited film. Contact angle and image analysis via computational treatment were used in order to compare the morphological characteristics with deposition parameters. The result shows that there is a direct relationship between the contact angle (hydrophobicity) and the morphology (granularity). We believe that these findings may contribute to optimization of films deposition and for the most diverse applications.