

April 26-27, 2018
Rome, ItalyM Luna Cervantes et al., Nano Res Appl, Volume:4
DOI: 10.21767/2471-9838-C1-009

STUDY OF THE INFLUENCE OF VOLTAGE AND TIME ON THE MORPHOLOGY OF TiO₂ NANOTUBE MATRIX USING GRAPHITE AS CATHODE AND ORGANIC ELECTROLYTE

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A 6x6 matrix of anodization experiments was planned and designed to obtain a tubular matrix of TiO₂ where we can observe and identify exactly how the morphology is influenced by voltage and time under an organic electrolyte and using graphite as cathode, even identify the time-lapse where nanograss is introducing in our nanotubular matrix. The anodization process consisted of an organic electrolyte of ethylene glycol, deionized water and NH₄F, six different voltages and a time lapse from 1 to 6 hours. After the anodization, the whole set of anodized samples were rinsed with deionized (DI) water and dried under heat gun (low temperature), no samples were cleaned in ultrasonic bath because we wanted to preserve the nanograss structure if it was there. The anodized samples were annealed to obtain the crystalline anatase phase. Optical characterization was performed by Raman spectroscopy to identify the increases in signal intensity, associated with the presence of nanotubes or nanograss. The morphological characterization was performed with scanning electron microscopy to visually verify the presence and density of the nanotubes, morphological structure (radial and length dimensions) and if nanograss was in there.

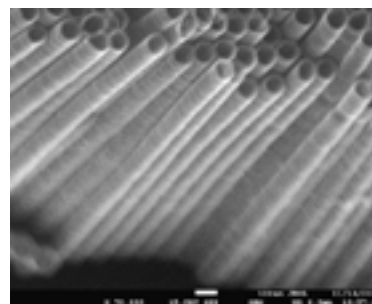


Figure 1: TiO₂ nano tubes matrix.

Biography

M Luna Cervantes studying a Master Sciences in Micro and Nano Systems. Several years was dedicated to teaching fields in 3D Technology (printing, scanning and modeling) using vanguard devices. Currently the goals are focused into research and science to SERS applications and how we can use it for environment cleaning applications.

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