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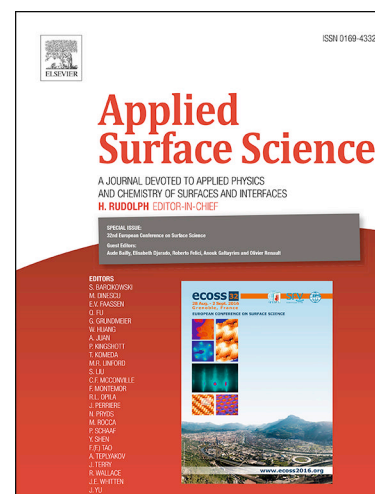
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## Surface chemistry and the corrosion behavior of magnetron sputtered niobium oxide films in sulfuric acid solution

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### Abstract

In this work, magnetron sputtered Nb<sub>2</sub>O<sub>5</sub> films were obtained at two different deposition times. The surface chemistry of the deposited layers was investigated by X-ray photoelectron spectroscopy (XPS). The corrosion behavior was assessed by electrochemical impedance spectroscopy, potentiodynamic polarization and potentiostatic polarization tests in 0.5 M H<sub>2</sub>SO<sub>4</sub> + 2 ppm HF solution at room temperature. The Nb<sup>5+</sup>/Nb<sup>4+</sup> ratio decreased with the deposition time, leading to a higher surface activity for the film obtained at 30 minutes. This result was confirmed by its lower impedance values and higher current densities when compared to the 15'-film. Surface chemistry played a major role on the corrosion behavior of the sputtered films and can be tailored by the deposition time.

*Keywords: Nb<sub>2</sub>O<sub>5</sub> films; magnetron sputtering; XPS; corrosion; sulfuric acid solution*

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