

## Neural Net Based Optimization of Wet Thermal Lateral Oxidation Rates

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Abstract: Critical parameters, AIAs mole fraction, temperature of the sample and the carrier gas flow must be controlled to establish a repeatable and uniform oxidation process. Modeling and simulation of these parameters has enabled the compilation of oxidation rate data for AlGaAs which exhibits Arrhenius rate dependence. The output is related to the inputs of the process by an artificial neural net model which is trained with historical input-output data. The data is originally extracted and manipulated from experimental laboratories measurements. The proposed method is tested through computer simulation and the results demonstrate the effectiveness of the code and the algorithm. The objective of this study is the prediction of lateral oxidation rates at variances of temperature and mole fraction for different compositions. This is done through optimization techniques.

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**Keywords:** Experimental measurements, Neural networks, Optimization, Modeling, MEMS lateral oxidation.