

Voltage oscillations – an emergent property at high density pore growth

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Abstract

The paper addresses macroscopic voltage oscillations observed during anodic etching of pores in n-InP [1] and GaP. These oscillations always occur concurrently with the modulation of pore diameters which are synchronized on large areas of the samples. The observed macroscopic voltage oscillations represent a kind of pattern formation of the system at high pore density which does not occur when the pore density is low and no interaction between pores is present. The voltage oscillations obtained at different temperatures and current densities are analyzed in time and space, including Wavelet transformations. A model of these macroscopic voltage oscillations will be presented, which is based on the basic principles of the current burst model developed for Si and which can be successfully applied to III–V compounds, too.