



Selforganized formation of crystallographically oriented octahedral cavities during electrochemical pore etching

S. Lölkes, M. Christophersen, S. Langa, J. Carstensen, H. Föll

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Abstract

The parameter dependence of electrochemically etched pores in silicon is studied. Using HF containing organic electrolytes and backside illumination on moderately doped silicon, macropores and octahedrally shaped pores can grow simultaneously. All experimental results can be understood within the framework of the current burst model under the assumption that the system selforganizes and switches the pore morphologies to that mode which optimally consumes the available electronic holes in the reactions. These results can be used to control the pore growth and will be taken as an input for a Monte Carlo simulation to get a quantitative description of the etching processes.