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Automation of the Al anodization used for the fabrication of highly ordered sub-100-nm nanopore arrays JACOB GONZALES, Department of Physics, Texas A&M Univeristy, KARIE BADGLEY, IGOR V. ROSHCHIN, Department of Physics, Texas A&M University — The anodization of aluminum films grown on silicon substrates under appropriate conditions is used to fabricate porous alumina arrays. Such porous arrays are used as sensors or lithography masks for fabrication of sub-100-nm nanodot arrays. The self-assembly of these pores into ordered arrays is determined by anodization parameters. We report on the automation of the anodization process that allows us to monitor and control these parameters. To improve ordering, two-step anodization is used. Through real-time current integration, computer software determines the depth of the anodized alumina, which allows us to stop the 1st anodization step. Control of voltage and temperature is also important for controlling pore diameters. Voltage and current are plotted in real time and recorded along with other parameters of sample fabrication. We investigate possibilities to automatically stop the anodization, once the Al film is anodized all the way through, using analysis of the rate of change of the anodization current. Control and optimization of other parameters will be discussed. Funded by Texas A&M University and Texas A&M University – CONACyT Collaborative Research Grant Program.

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