

Measurable electrostatic effects in nuclepore filters

Romo-Kroger,

This note presents measurements of the electric charge in a Nuclepore filter attained with a simple device able to detect induced charge in a metallic plate which is registered through a 610B KEITHLEY electrometer. A mathematical model to describe the temporal behavior of this charge is also presented. The filter used was a polycarbonate membrane with 47 mm in diameter, 10 μ m thickness and 0.4 μ m pore diameter. The sampling system was a Stacked Filter Unit² with a flow about 8 L/min. Both filter and filter holder are provided by Nuclepore Corporation. The charge present in the filter during the process of filtering was measured. This static charge exhibited an increase in the first 30 min to reach an approximately constant value. This value depended on the relative humidity during the experiment. An equation for the growth of the filter charge at the filtering operation was also derived.