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Electrostatic interactions between atomic force microscope tip and mostly dielectric surface near glass transition point SERGEI F. LYUKSYUTOV, Departments of Physics, Chemistry, and Polymer Engineering, The University of Akron, OH 44325 — Behavior of thin dielectric near glass transition point is a mystery. A strong non-uniform electric field (10^9 Vm^{-1}) induced by a biased atomic force microscope tip creates nanoscopic mass transport resulting in nanostructure formation in a broad class of polymers near GTP. Similar trend under same experimental conditions is observed in iridovirus shell composed of proteins folded in capsomers. It is suspected that structural re-arrangement of polar amino acids is the reason. In all cases an AFM tip is a major player in the technique, we name, atomic force microscopy electrostatic nanolithography (AFMEN). This experimental technique produces very similar nanostructural changes in polymers, SAM, and biological cells. We attempt to describe this behavior.

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