Using the Atomic Force Microscope to Determine the Effect of the Deposition Time of APTES on the Adhesion of DNA Plasmids to a Silicon Surface

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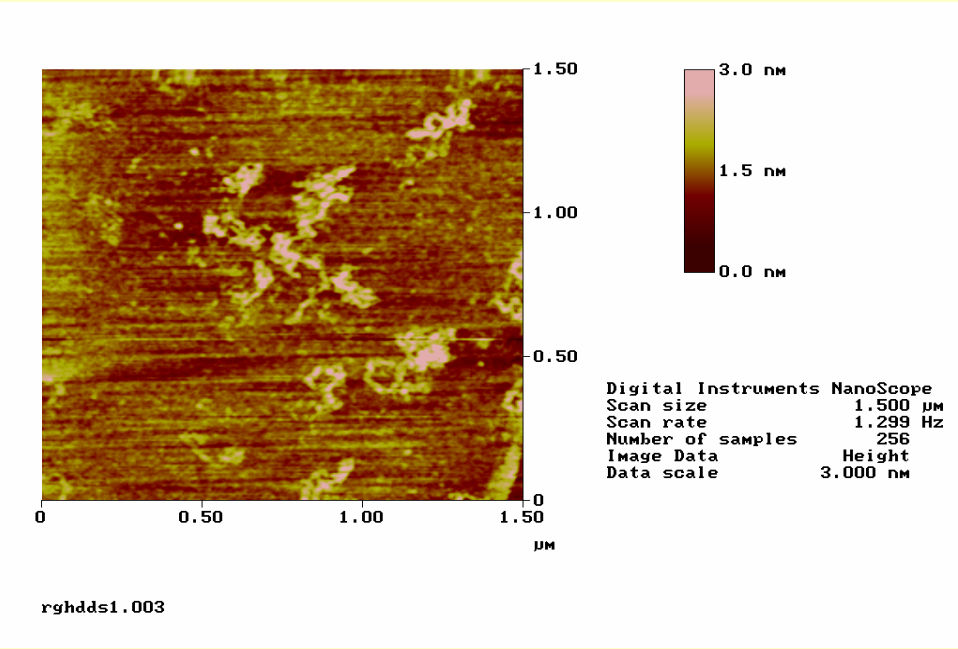

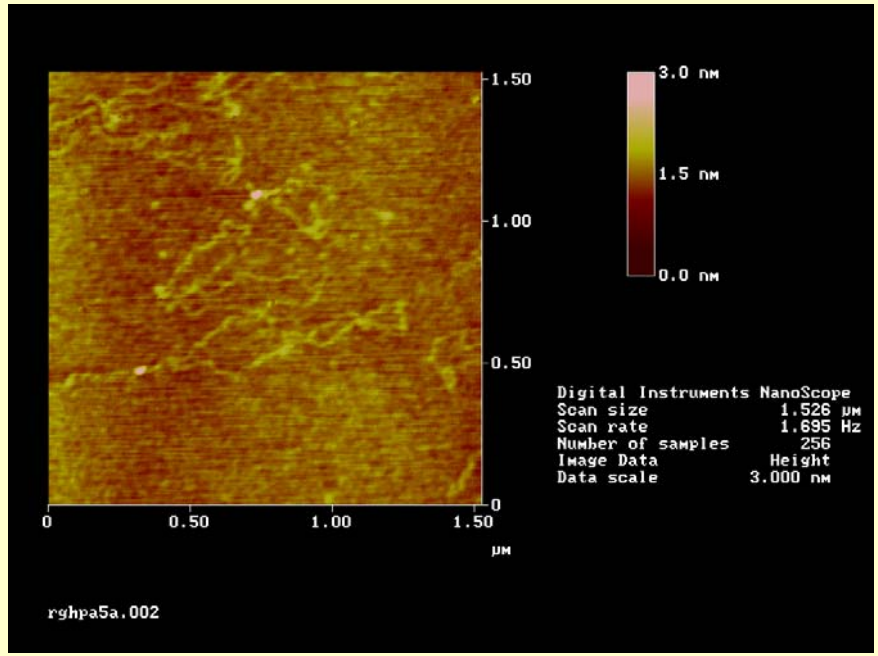

(figure 1)

(figure 2)

The atomic force microscope can be used to detect DNA on the surface of silicon wafers. APTES (3-aminopropyltriethoxysilane) is an organic coupling molecule that allows organic molecules like DNA to adhere to inorganic surfaces like silicon when they soak in it. The problem with using APTES to accomplish this is that the DNA is held too tightly and tends to twist back on itself, and the APTES molecules on the surface and form “clumps” (see figure 1). The aim of this investigation is to determine if changing the time of APTES deposition on the silicon chips will allow the DNA to “relax” more so as not to coil up so tightly (see figure 2). A time course deposition is described and images taken using the atomic force microscope are used to illustrate the results.