

# Supercoiled DNA structure investigated with atomic force microscopy

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Atomic force microscopy (AFM) was used to investigate the structure of supercoiled DNA at different superhelical densities (from -0.04 to +0.04) using two different environmental conditions able to promote DNA immobilization on mica substrates. In presence of magnesium ions, the overall shape of deposited DNA molecules showed a sharp transitions from a relaxed to a highly plectonemic shape when the superhelical density is increased from negative to positive values. In contrast, DNA molecules deposited on mica endowed with positive charges using a mild silanization process, show a plectonemic shape both at -0.04 and +0.04 superhelical density values, and a more relaxed shape at intermediate values. We interpret this data as an interplay of local DNA form and superhelical shape changes.