

Abstract Submitted
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Confinement and elastic modulus in polymer nanofibers EYAL ZUSSMAN, MICHAEL BURMAN, ARKADII ARINSTEIN, Technion — Size-dependant behavior is considered in electrospun polymer nanofibers. Experimental results unambiguously show that the abrupt increase in the elastic modulus of polymer nanofibers, below a cross-over diameter, relative to the bulk could not be attributed to surface energy effect. Polyamide (*Nylon-6.6*) nanofibers were tested by using either bending or tensile deformation modes (the surface energy affects the effective modulus only in the case of bending, and has no effect in the case of tensile deformation). It turns out that the obtained experimental data cannot be explained by the influence of surface energy upon the elastic modulus either qualitatively or quantitatively. This fact supports the explanation which is based on the geometrical confinement of the supermolecular structures of nano-objects.

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