Polymers Under Constraint

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fd virus is a polymeric virus 1 μm in length and 10 nm in diameter. We bind fluorescently labeled fd to 1 μm diameter polystyrene spheres creating a charged polymer stabilized colloid (hairy bead) and measure the interparticle potential using a double laser trap. We first measure the interaction energy of (a) bare beads and (b) then the hairy beads, seen here in fluorescence microscopy. (c) Electron micrograph of hairy beads. The repulsive energy of hairy beads is large when the beads are close. (d) We 40 implement a double laser trap and employ an 30 algorithm developed for computer simulations to 20 measure the interaction potential as a function of 10 ionic strength.

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