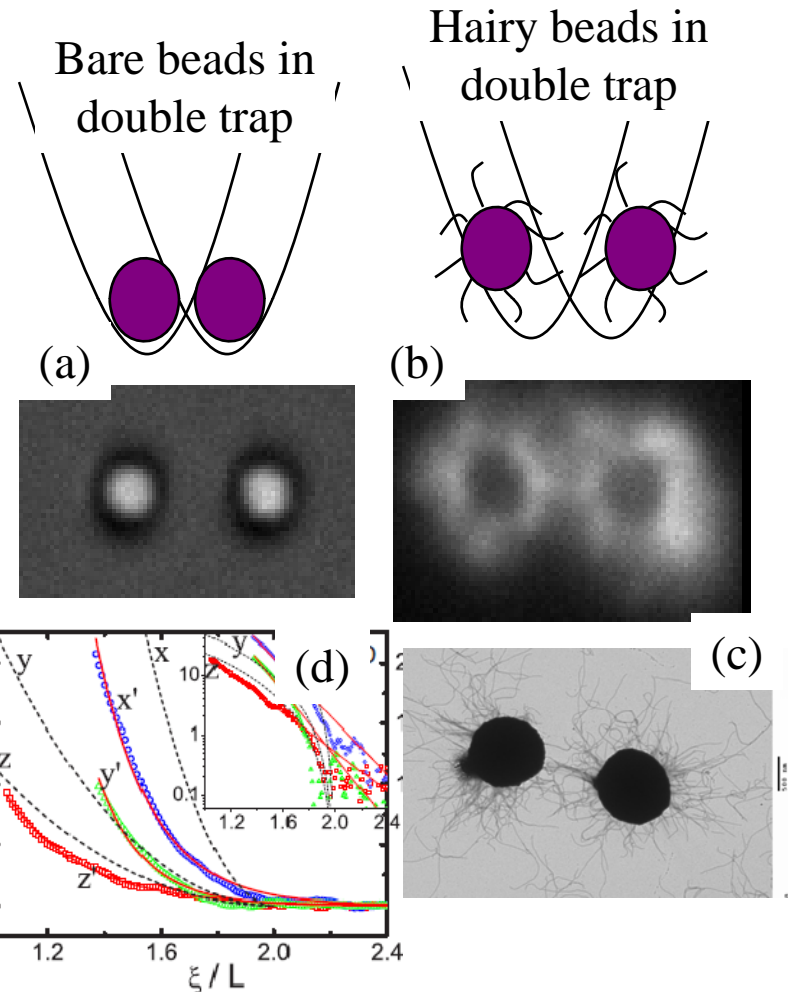


Polymers Under Constraint

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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



PRL 102, 108302 (2009)