

QUIZ on Lecture P1_Wk4_L2

1. When the tip jumps into contact with the substrate
 - a) the slope of the force vs. distance curve equals k , the spring constant of the microcantilever
 - b) the slope of the force vs. distance curve equals $1/k$, where k is the spring constant of the microcantilever
 - c) the curvature of the microcantilever equals the slope of the force vs. distance curve
 - d) the displacement of the microcantilever equals the slope of the force vs. distance curve
2. In equilibrium, a non-zero cantilever deflection is observed when a tip is positioned a distance z above a substrate. The cantilever deflection
 - a) produces a force that counteracts the tip-substrate interaction
 - b) produces a force that adds to the tip-substrate interaction
 - c) produces no force
 - d) produces a force that causes the cantilever to twist
3. In general, once the tip jumps into contact with the substrate,
 - a) the tip will become permanently embedded in the substrate
 - b) the tip will immediately rebound from the substrate due to a restoring force produced by the cantilever
 - c) the tip will remain in contact until a sufficiently large lift-off force is applied
 - d) the tip will be repelled back to its original position by the tip-substrate vdW interaction
4. To a very good approximation, the jump to contact phenomenon occurs at a
 - a) constant value of d
 - b) constant value of q
 - c) constant value of z
 - d) constant value of d^{-2}