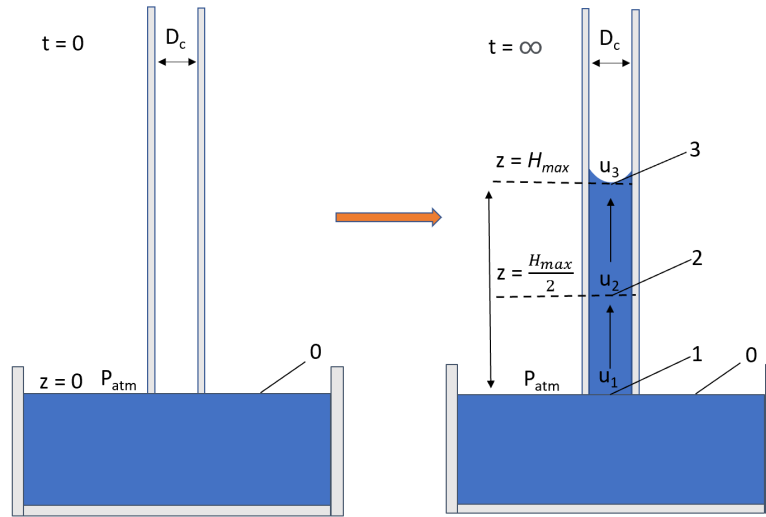


1) An open capillary tube is brought into contact with a reservoir of water and the water rises to a final height, H_{max} , as shown below.

Data: $L_{capillary} = 0.1 [m]$, $\mu_{water} = 0.001 [Pa \cdot s]$, $\sigma_{water-air} = 0.072 [N/m]$, $D_c = 500 [\mu m]$, $\rho_{water} = 1000 [kg/m^3]$, $g = 9.81 [m/s^2]$



Show all your work on a separate page and state all the assumptions that you made.

a) As the water level approaches H_{max} , determine the rising meniscus velocities $[m/s]$ at points 1, 2 and 3.

b) What is the maximum volume of water, $V_{max} [m^3]$, in the capillary after the capillary is lifted above the reservoir.

c) Sketch a graph of $H [m]$ vs. velocity $[m/s]$ for the rising meniscus velocity.