

Problem 406A

This problem is concerned with the growth of boiling bubbles at a surface to which heat is being supplied at a rate Q (heat/unit area/unit time). If the nucleation site density is N (sites/unit area) and if the bubbles are modeled as spherical with a radius, $R(t)$, where t is time, then determine the bubble growth rate, dR/dt , for steady state boiling in which the mean temperature of the liquid remains unchanged. Assume that both the latent heat, \mathcal{L} , and the density of the vapor in the bubbles, ρ_V , are known and fixed.