CORRECTIONS TO HW #5 SOLUTIONS

Problem 4: The volume of the plasma etcher is a missing from the answer. The GENERATION term should be $Vk_Fn_gn_e$, not $k_Fn_gn_e$. Therefore, V should appear in the numerator of the etch rate.

Problem 5: The solution handed out in class is for a 6" wafer. The wafer size wasn't specified in the problem, so the correct solution should have been:

flux of gold from the target, $\Gamma_T = 2.8x10^{19}$ s^{-1} / (area of the target) = $9x10^{16}$ cm^{-2} s^{-1}

Then, the flux to the wafer is 0.5 times this quantity: $\Gamma_W = 4.5x10^{16}$ atoms cm^{-2} s^{-1}

and the depostion rate is 0.46 µm per minute.

Problem 6. A factor of $(8)^{1/2}$ is missing from the thermal velocity term $(8kT/\pi m)^{1/2}$. So the flux of B atoms should be sqr(8) higher in both parts. This make the deposition rate ~1300 µm/min at 1000C and 212 µm at 800 C.