Problems of Heat Transfer

Chapter 1

1.4 $k = 0.10 W/m \cdot K$.

1.11 $\Delta T = 1.1℃$.

1.12 $q'' = 9800 W/m^2$.

1.18 Pmax = 0.35 W (as *air* case);

Pmax = 5.25W (as *dielectric liquid* case).

1.21 Pe = 15 mW.

1.22 $h = 6.4 W/m^2 \cdot K$.

1.25 Ts = 254.7 K.

1.27 $\varepsilon = 0.418$;

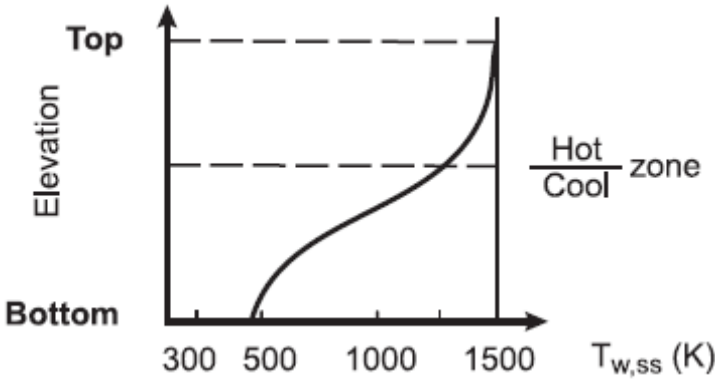
$$q_{rad,emit} = 262.14 W .$$

1.32 (a) 8.1W; (b) 0.23 kg/hr; (c) sure, reduce 64% to 0.083 kg/hr.

1.42 The S-S upper surface Tw,u = 1000℃, the condition might not be met.

1.43 (a) (dTw/dt) = 104 K/s;

(b) Tw,ss = 1251 K,(Tw,ss =1262 K as ignoring the effect of convection).



1.53 Tave ≈ Ts = 322 K.

1.65 $T_\infty \approx 618 K = 345℃$.