1- Calculate the energy emitted by a blackbody at 1000°C.

2- A solar radiant heat flux of 700 W/m² is absorbed in a metal plate that is perfectly insulated on the back side. The convection heat-transfer coefficient on the plate is 11 W/m²·°C, and the ambient air temperature is 30°C. Calculate the temperature of the plate under equilibrium conditions.

3- A hair dryer is basically a duct in which a few layers of electric resistors are placed. A small fan pulls the air in and forces it to flow over the resistors where it is heated. Air enters a 1200-W hair dryer at 100 kPa and 22°C, and leaves at 47°C. The cross-sectional area of the hair dryer at the exit is 60 cm². Neglecting the power consumed by the fan and the heat losses through the walls of the hair dryer, determine (a) the volume flow rate of air at the inlet and (b) the velocity of the air at the exit.