

**MIE 313 Heat and Mass Transfer**  
**Due June 27, 2016 @ 5:00pm EST**

*Provide a detailed solution for the following problem. State all assumptions.*

A 15-cm x 20-cm circuit board houses on its surface 120 closely spaced microfluidic fuel cell chips, each dissipating 0.15W. If the heat transfer from the back surface of the board is negligible, determine:

- The amount of heat this circuit board dissipates during a 12-hour period, in kWh, and
- The heat flux on the surface of the circuit board, in  $\text{W/m}^2$ .

