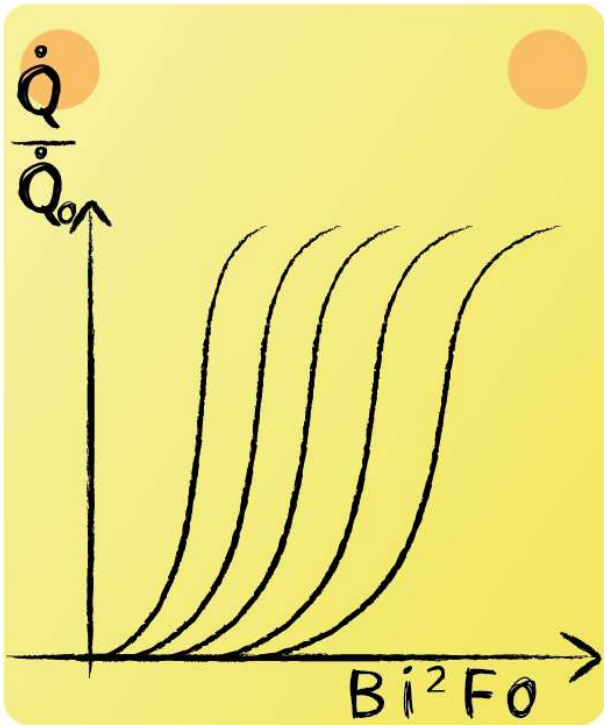
Lecture 17- Question 6



Remember the Heisler diagram for a plate as sketched in the figure. A flat plate surrounded by a fluid, with the known parameters λ, a, α, T_a, m and x_1, has at time instant t_0 temperature T_0. After some time the temperature at the center has cooled down to T_1 at time instant t_1. Which of the following parameters can **only** be determined with use of the Heisler diagram?

The dissipated heat after heat dissipation Q and the remaining heat after heat dissipation Q_t.

After determination of the dissipated heat Q by the Heisler diagram and after and calculation of total heat stored in the object $Q_\mathrm{o} = m \cdot c_\mathrm{p} \cdot (T_0 \cdot T_\mathrm{a})$ the remaining heat after heat dissipation $Q_\mathrm{t} = Q_\mathrm{o} - Q$ can be determined. This would not be possible without use of the Heisler diagram.

The other parameters are given or can be calculated by their known formulas.