# Flat Plate Convection Lab

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**Figure 1a.** Plot of the experimentally and theoretically calculated surface temperature on the y-axis in kelvin versus non dimensional length on the x-axis. The blue circles represent measured surface temperature values on the top of the plate, red squares represent measured surface temperature values on the bottom of the plate, the solid black line represents theoretical surface temperatures on the top of the plate only accounting for convection, and the dashed black line represents theoretical surface temperatures on the top of the plate accounting for convection and radiation.

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**Figure 1b.** Plot of experimental and theoretical local heat transfer coefficient on the y-axis in watts per square meter kelvin versus non dimensional length on the x-axis. The black line represents the theoretical local heat transfer coefficient while the black circles represent the experimental local heat transfer coefficient.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | (W/m2K) | qs  (W) |
| Measured | 340.89 | 38.37 | 10.199 |
| Theoretical | 243.67 | 27.43 | 4.026 |

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**Figure 1c.** Plot of experimental and theoretical local Nusselt number on the y-axis versus non dimensional length on the x-axis. The solid black line represents the theoretical local Nusselt number and the black circles represent the experimental local Nusselt number.

**Table 1d.** Measured and theoreretical values for the average Nusselt number, average heat transfer coefficient in watts per square meter kelvin, and net heat transfer rate in watts on the top surface of the plate.

Short-Answer Questions

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2b. [insert your response here]

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2c. [insert your response here]

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2d. [insert your response here]