Purdue University
School of Nuclear Engineering
NUCL 355 - Nuclear Thermal-Hydraulics Laboratory

Lab 10: Prelab
Transient Heat conduction

The heat transfer coefficient for air flowing over a sphere is to be determined by observing the temperature-time history of a sphere fabricated from pure copper. The sphere, which is 40 mm. in diameter, is 80 ^{o}C before being inserted into an air stream having a temperature of 20 ^{o}C. A thermocouple on the outer surface of the sphere indicates 65 ^{o}C, 56 s after the sphere is inserted in the air stream. Assume, and then justify, that the lumped parameter model is valid and calculate the heat transfer coefficient.