Faculty Name: Farah Mohammadi

Project Title: Development of a laboratory setup for in-vitro evaluation of bio-heat transfer

Description of Project (Provide ½ page project description)

The objective of this project is to develop a laboratory setup for in-vitro evaluation of steady-state or transient bio-heat transfer problems. The developed experimental setup must be able to acquire realistic Infrared data for electromagnetic and thermal analysis of in-vitro mode to verify previously developed numerical models. A cuboide adipose hanging in air is heated continuously to reach a stable temperature distribution. The front surface temperature image is captured by a high performance infrared (IR) thermal scanning system. The experimental setup must be able to accurately predict the heat-rate, size, and depth of an embedded heat source.

Responsibility of Student (Specify the duties and responsibilities of the student)

- Become familiar with high speed, high resolution Infrared camera.
- Become familiar with input/output of Infrared camera.
- Develop Experimental Test Set up
- Perform Experiments on adipose (A piece of adipose will be heated by EM wave)
- Capture the thermal image by IR camera at front end at steady state
- Calculate the transmitted, stored and radiated energy
- Insert a metal object (disc and spherical shape) into a piece of adipose
- Position and temperature of the metal object must be controlled
- Capture the thermal image by IR camera at front end at steady state
- Data analysis
- Prepare a technical report and present the results at the end of the program

Specify Requirements (Please state any specific requirement of this position)

- Expected to interact with a multi-disciplinary team of researchers in the laboratory
- Strong interest in experimental work is required
- Sound knowledge in data/signal analysis is required