A. Briefly describe overall research program at your laboratory. The Mefford laboratory is focused on the synthesis and characterization of magnetic nanomaterials for biomedical applications. We are specifically seeking new materials that are efficient in their targeted energy delivery to unwanted bacteria, detect disease, and measuring chemical changes in the body. Major efforts in the lab consist of precisely making the particles and polymers necessary to achieve these goals.

B. Briefly describe specific project(s) for your teacher: The teachers involved in this project will be integrated into existing work. For example, the teacher will be trained on the proper synthesis and characterization of nanoparticles, and the measurement of their heating efficiency. Following training the participants will be given a unique challenge within the project for them to solve. In the past this has been developing new techniques for non-destructive characterization of materials, testing frequency response to temperature, and measuring the effects of viscosity.

C. Will any other people (post docs, grad students, undergraduate students, colleagues, etc.) be involved directly with your teacher? There will be one graduate student that will work directly with the teacher, with a weekly group meeting, and a one-on-one meeting with Mefford.

D. Will you require any advanced reading/preparation for the teacher? If yes, please briefly describe. We are heavily synthetic laboratory. Having experience working in a chemical laboratory would help have a meaningful experience.