

Progress Report #3

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COS120: Introduction to Research

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January 22, 2026

Objectives

For the past month we have continued with our research in thermoelectric materials. We have already ordered our supplies which are currently in the process of being shipped. At the moment, we have already obtained thermocouple, multimeter, graphite powder, lamp, concrete, superplasticizer, carbon sheet, iron oxide, carbon fibers and molds. While waiting for our materials to be shipped we have tested various simulations regarding concrete. Once we have the rest of our materials, we plan to start building the apparatus of the experiment.

Materials & Methods

In the past few weeks, we have since put in the order form that we derived from our previously designed methods. From that order form, we have received the superplasticsizer, thermocouple, heat lamp, graphite powder, iron oxide, multimeter, copper sheet, carbon fiber, silicone molds, and cement mix. This has allowed us to now be able to form a clearer schedule for physical experimentation using the ice trays for when we receive the rest of our materials as shown below.

This schedule does account for first utilizing the materials that we currently have in order to mitigate any delays on other material's arrivals.

Data/Results

Since our last progress report, our team ran our independent variables through an online thermoelectric properties simulator to predict how it may produce power. The results below are shown.

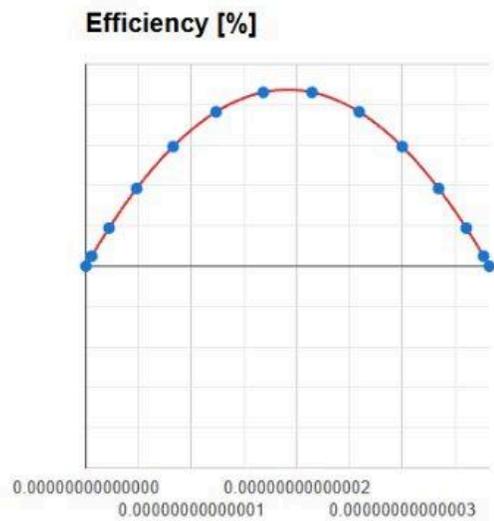
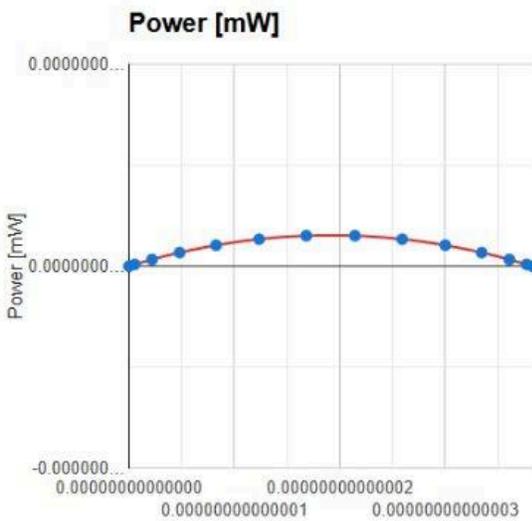


Figure 1. Cement Thermoelectric Properties

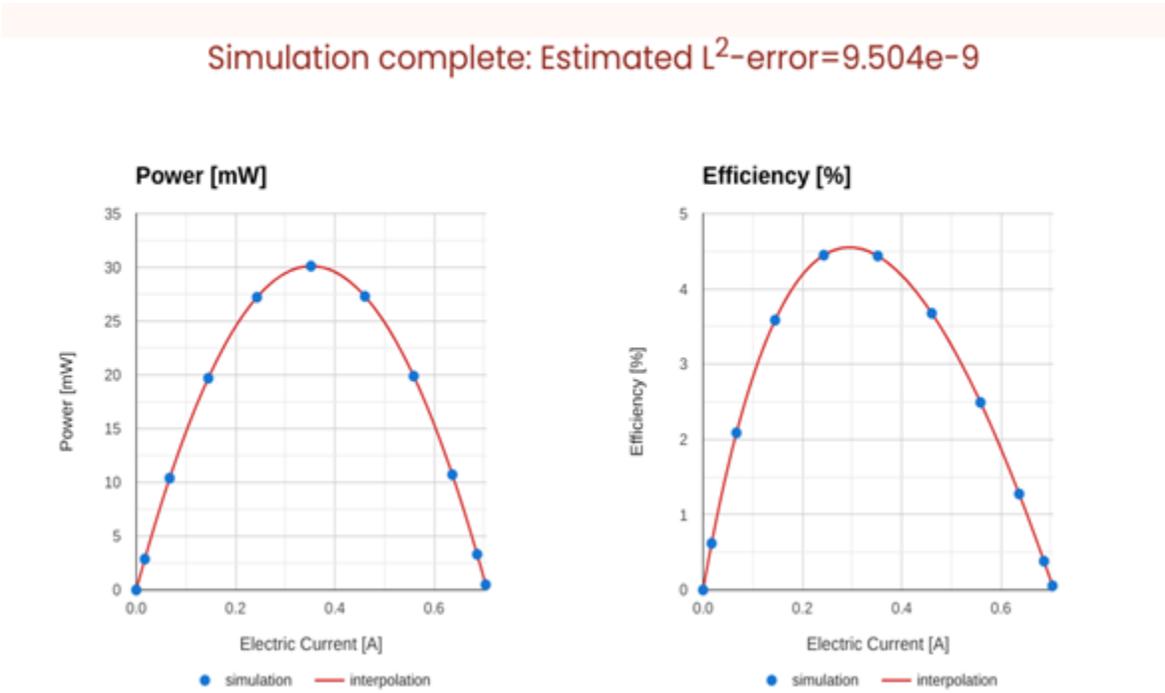


Figure 2. Carbon Fiber

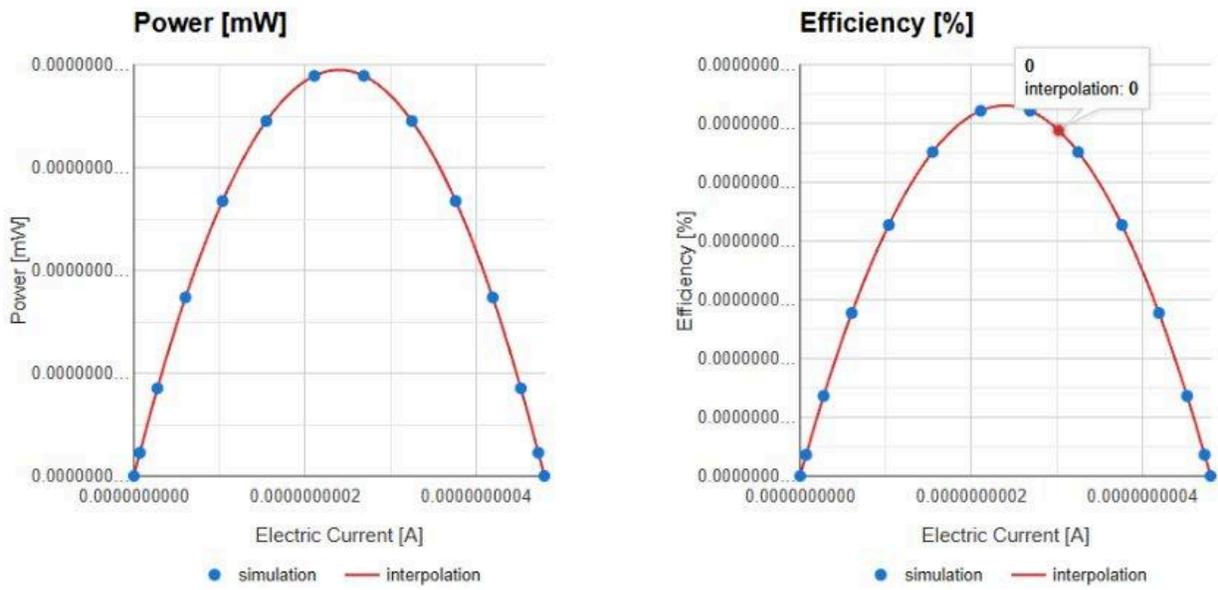


Figure 3. Fly Ash Thermoelectric Properties

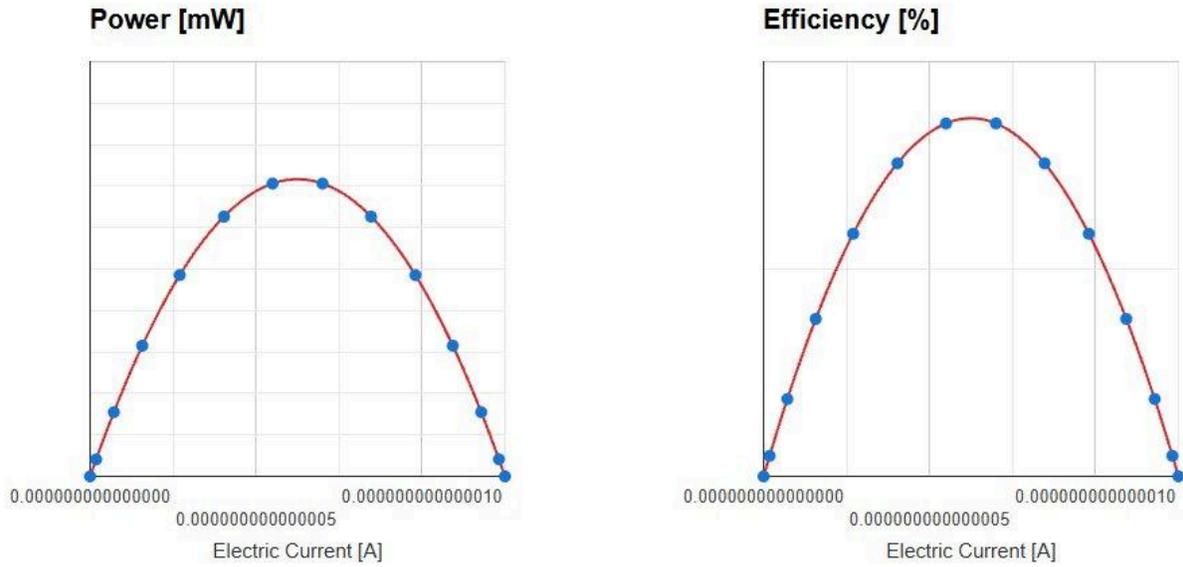


Figure 4. Graphite Powder Thermoelectric Properties

The simulated results showed that carbon fiber would most likely produce the highest levels of power by multiple orders of magnitude; however, we will not be able to determine more accurate results until physical experimentation.

References

Chung, Jaywung. "Thermoelectric Power Generation Simulator." *Keri.re.kr*, 2019, tes.keri.re.kr/.

Accessed 23 Jan. 2026.