

**Name:** Katelyn Lesk

**Major:** BioEngineering **Minors:** Materials Science and Engineering and Chemistry

**Honors and Awards:**

- Joseph F. Mulach, Jr. and Louisa A. Mulach Scholarship of The Pittsburgh Foundation for Females in Engineering and Sciences

**Experience and Community Outreach:**

- Presenter, Biomedical Engineering Society Annual Meeting, Chicago, IL
- Poster Co-Author, Society for Biomaterials Annual Meeting and Exposition, Pittsburgh, PA
- President, Tau Beta Pi Engineering Honor Society
- Freshman Engineering Leadership Team
- Service Chair, Golden Key International Honor Society

**Future Plans**

“After graduation, I plan on working for a biomedical device company in the Pittsburgh area.”

**Voting Information**

PA, District 8

**Project Abstract**

An electroencephalogram (EEG) is an important tool in the diagnosis of brain disease and head trauma. The implications of a misdiagnosis could be very detrimental to a patient and it is therefore essential that these readings are as accurate as possible. One way to obtain more accurate and richer information is to apply hundreds of electrodes to the scalp, a technology called high resolution EEG. The purpose of this research is to develop novel electrodes that utilize new materials such as conducting polymers and hydrogels to transmit electrical signals from the skin. The new design has a ten-fold reduction of size than the conventional EEG electrode without compromising the sensing power, and additionally, a smaller electrode is necessary for high resolution EEG to avoid signal overlap. These electrodes, once fitted into a helmet-like apparatus designed by a collaborating lab, could greatly improve the accuracy of EEGs as well as improve the comfort of the patient and the ease of the procedure.

**Project Faculty Advisor:** Xinyan Tracy Cui, Department of Bioengineering, School of Engineering, Pittsburgh Campus

