Smart Materials Based Environmental Sensing

Smart materials based sensors exists in research with the capability of detecting environmental changes locally in a relatively short period of time. However, utilizing these sensors over large areas poses challenges in electrical design. This project aims to develop an electrical sensor system that will be deployable within large areas such as plants with hydrocarbon response times of under an hour. Design for environmental conditions and abnormalities will be important in creating a system with high efficacy and robustness. Current designs feature the use of time domain reflectometry to detect and pinpoint damage points over the span of the sensor network. Our goal is to improve this reflectometry design and implement creative additions to improve efficacy and scalability. There is much room for innovation in this project, and the student will be working in a team to combine material science and electrical principles to construct a medium-scale prototype of the sensor system.