Name(s)	Project Number
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Project Title
Constructing an Arduino Gas Sensor to Detect Odors

Abstract

Objectives/Goals

For my project, I built a gas sensor and coded a program to make it output readings. I chose this project because in my neighborhood, there is a nearby water treatment plant which often produces odors. I hypothesized that I could build the gas sensor, and I hoped its readings would be accurate enough to detect hydrogen sulfide or ammonia emissions.

Methods/Materials

I put together materials for the gas sensor I built, including an Arduino, a gas sensor, the Arduino IDE, and a Java IDE. I placed my gas sensor indoors, outdoors, and at three water treatment plants. During the evening, I placed the gas sensor in one of the locations, and picked it up the next morning. When I picked the sensor up, I transmitted the data onto a computer.

Results

In all of the places that I placed the sensor, there were no odors. Therefore, the readings were similar. However, at each place, the readings decreased at a different rate. I realized that the sensor needs to warm up, and therefore outputs inaccurate readings until it warms up. All of the outdoor locations had readings decrease to 0, and the readings never reached 0 indoors. I also placed the sensor over different concentrations of ammonia-containing window cleaner, since the sensor also detects ammonia. As expected, the readings of the gas sensor were the highest when the sensor was placed over the full concentration of window cleaner, and lowest when the sensor was placed over a 0.25 concentration of window cleaner (the lowest concentration). When the sensor was placed over a 0.25 concentration of window cleaner, the readings were significantly lower than the readings that occurred when the sensor was placed over the full concentration of window cleaner.

Conclusions/Discussion

In my project, I discovered that it is possible to build a low-cost gas sensor. I found that indoor air had higher levels of odors than outdoors, and that the sensor initially outputs inaccurate readings. To improve the testing, the sensor could be taken to a water treatment plant that produces a more significant odor, and the findings could be used to build a low-cost sensor for dangerous gases in homes.

Summary Statement
In my project, I built a gas sensor with an Arduino and coded a program in order to make it output readings.

Help Received
Father helped gather supplies, helped with soldering, and helped with coding; Mother helped with display board; Science teacher helped with report and display board