Developing a Deployable pH Sensor to Monitor Ocean Acidification, Year Three

Haase, Evelyn (School: Molokai High School)

This science fair project worked to develop a solution to the problem of infeasible and inaccurate deployable pH sensors not suited for the marine environment reduce the quantity of accurate ocean pH data on a worldwide scale. To solve this, the device had to accurately monitor ocean pH for extended period of time with high levels of accuracy. The sensor was deployed in a watertight capsule, submersed to 1 foot, and powered by an internal 10,000mAh battery. The project involved designing and programming a sensor and capsule that performs in accordance with the engineering goal. The sensor is currently in the testing stage for sensor accuracy, watertightness, and deployment functionality. The results indicate that the sensor is accurate and consistent, varying ±0.010. The sensor functions accurately at all three pH points, 4.000, 7.000, and 10.000. Further testing in accuracy and consistency in variable temperature and salinity is required. The the protective capsule for the sensor has proven to be waterproof in only one of the tests and requires additional testing. The battery obtained has proven to last only a total of 16:00:00 hours. Another battery that lasts longer is required. The deployed sensor resulted with readings within the expected pH for the ocean area being tested. The sensor being designed has displayed that it is up to four times more accurate and consistent as the leading deployable pH sensor and 1/52th of the price.

Awards Won: