

## Introduction

- The Internet of Underwater Things (IoUT) is a network of smart interconnected technologies used to observe underwater activities.
- A self-powered underwater monitoring system is designed to collect data on the quality and the temperature of the water.

## System Design

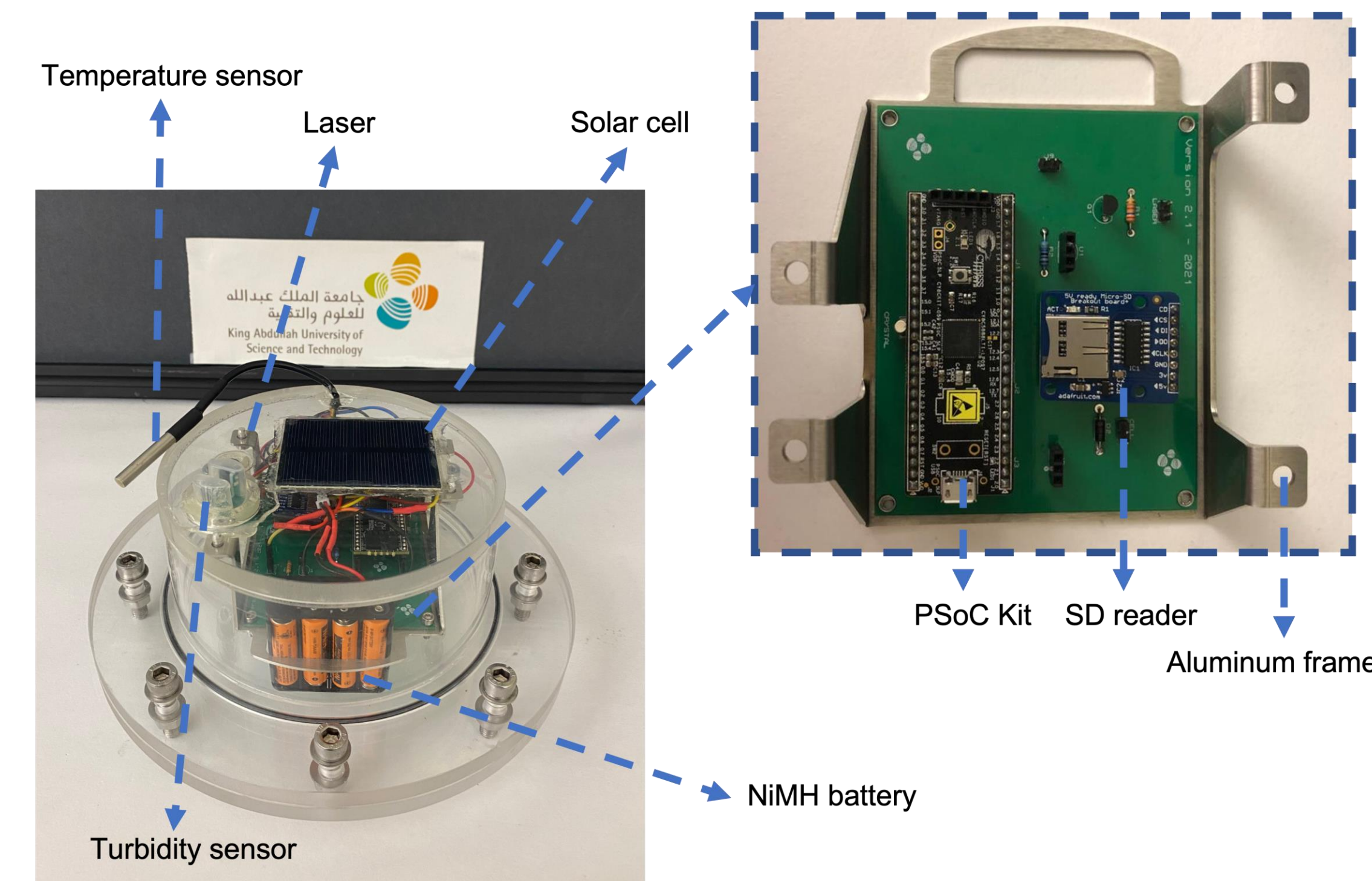


Fig. 1. The underwater monitoring system

- The system was designed to record the data from the temperature and turbidity sensors.
- For ensuring low power, the system spend most of the time in sleep mode.
- The system is powered by a 5V battery. The battery is recharged by the solar cell.

## Conclusion

- The internal memory of the probe can store 1 year and 3 month of data.
- After fully charged, the battery can sustain the probe for 16.27 hours.
- The solar panel can feed up to 154.28mW of power to the battery.

## Motivation

The population of the coral reef is decreasing due to climate change. Climate change affects the temperature and turbidity of water.

Preserving the coral reef is critical because:

- Protects coastline from storms
- Provides food and protection to species
- A source for medicine

## Experimental Results

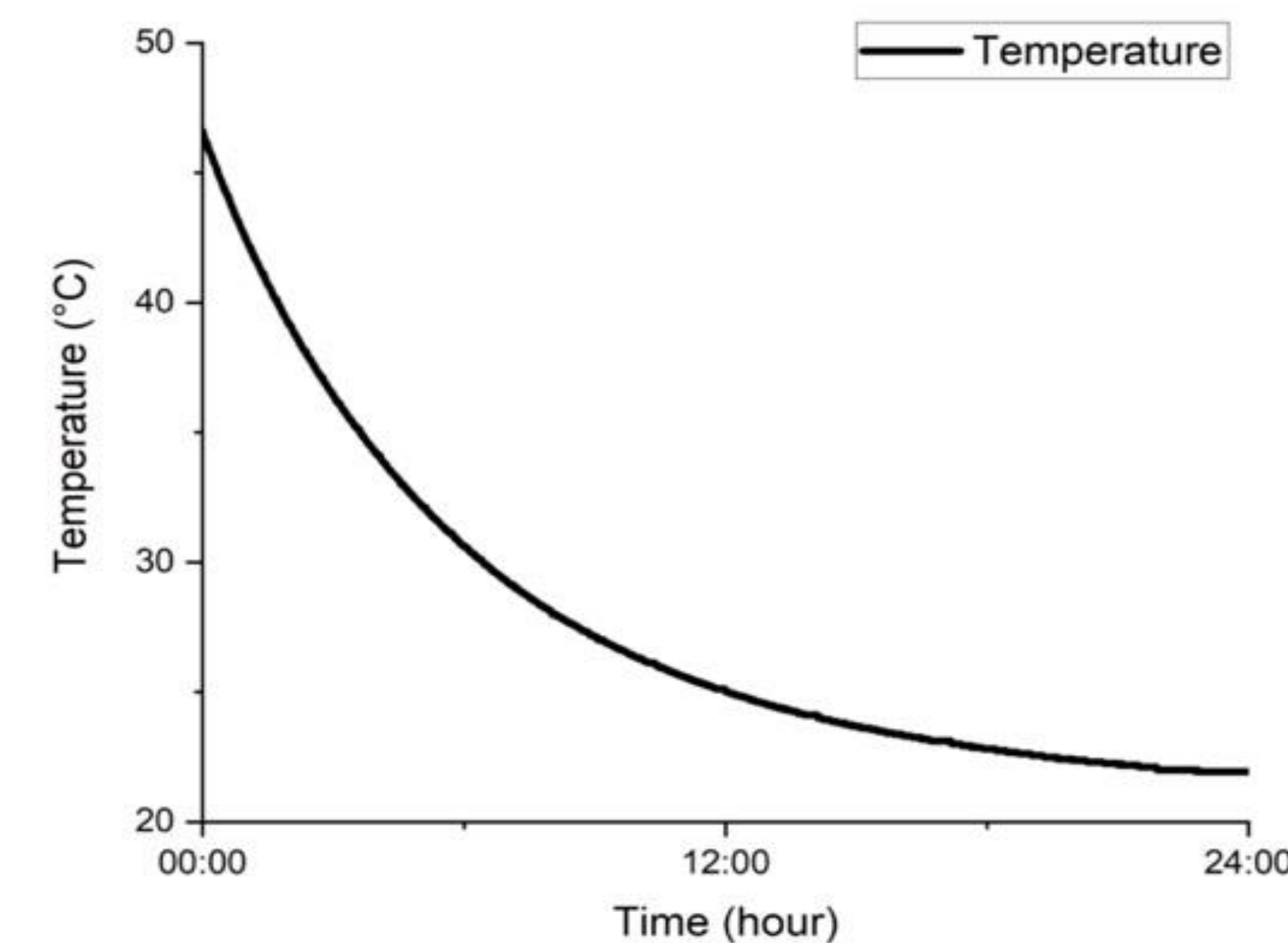


Fig. 2. The change of temperature measured by the sensor for over 24 hours.

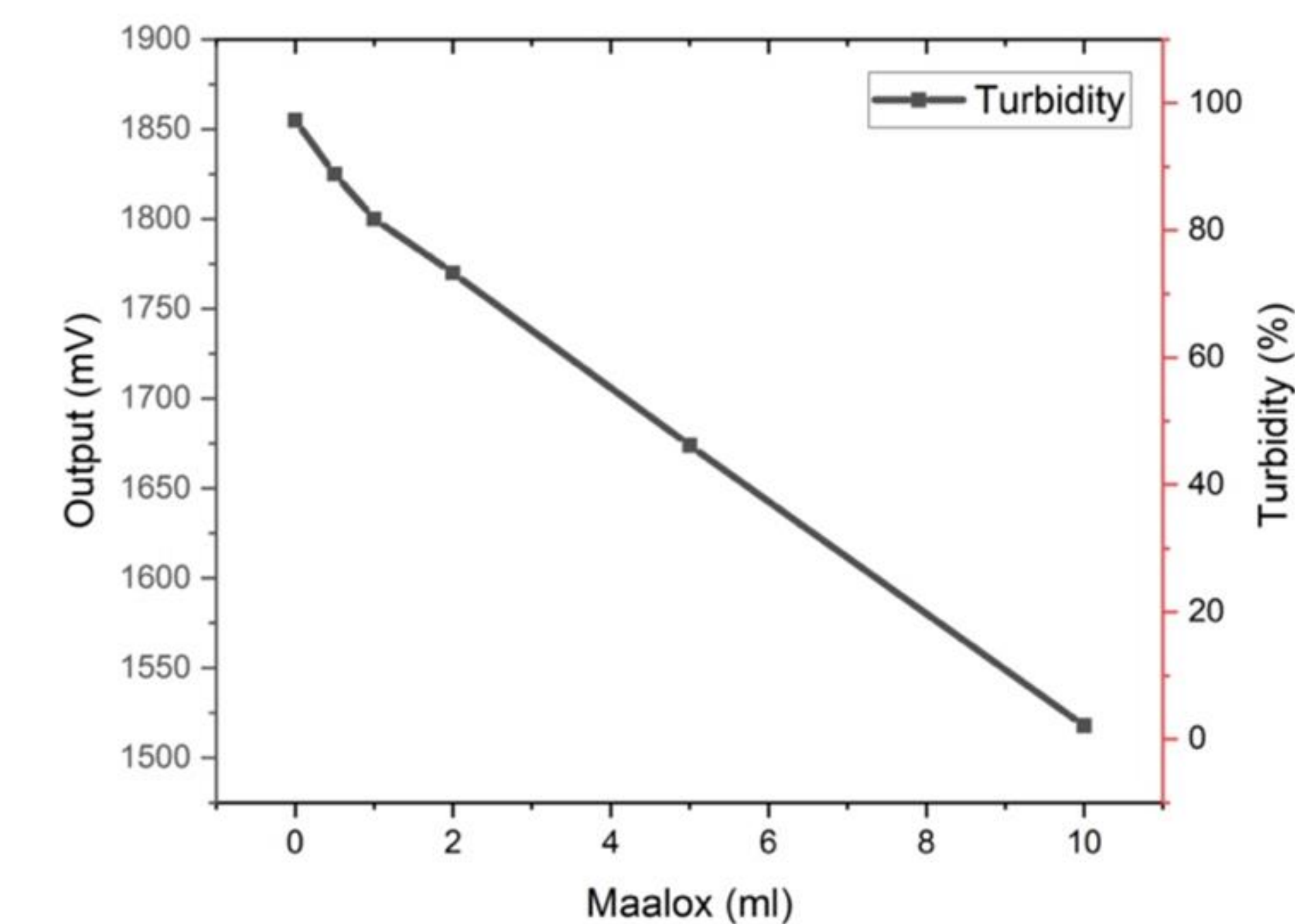


Fig. 3. Output value from the turbidity sensor vs Maalox concentration.

## Resources

1. M. Jahanbakht, W. Xiang, L. Hanzo and M. Rahimi Azghadi, "Internet of Underwater Things and Big Marine Data Analytics—A Comprehensive Survey," in IEEE Communications Surveys & Tutorials, vol. 23, no. 2, pp. 904-956, Secondquarter 2021, doi: 10.1109/COMST.2021.3053118.
2. National Ocean and Atmospheric Administration, "Coral reef ecosystem"