

Analyzing Parameters Optimum for a Highly Sensitive Analyte Sensor in a Point Of Care Medical Device

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Abstract

- Existing analyte testing methods are error-prone, time consuming and expensive.
- A point of care sensing medical device capable of accurate, fast and low-cost testing is required.
- Can we develop a highly sensitive analyte sensor?

Methodology

- Sensor Preparation

1. Clean the chips with Ethanol
2. Dispense specific volume amount of solution onto the chips
3. Dry them in the oven overnight

- Testing

4. Place the dried sensors in a testing box
5. Pass the specific amount of analyte through the box and leave it for 24 hrs for reaction
6. Analyze the response of the sensors with image analysis tools

Data

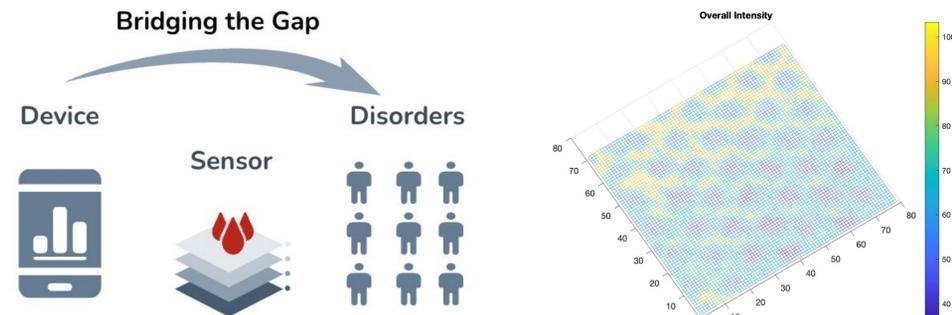


Fig. 1 Point of Care Sensing Device

Fig. 2 Example Image of RGB Analysis of sensor

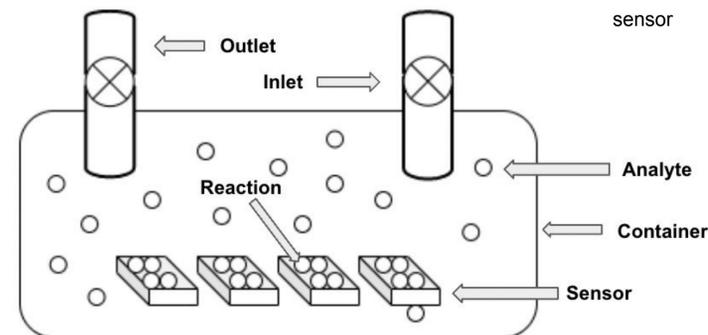


Fig. 3 Sensor Testing Setup

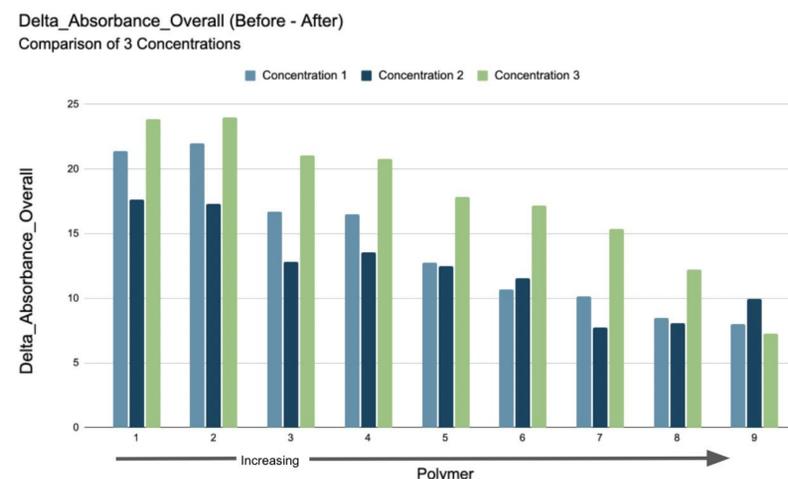


Fig. 4 Change in absorbance after reaction | Comparison of 3 concentrations and 10 different amounts of polymer

Conclusion

- Sensors react with the analyte and change its color.
- Max change in absorbance, after the reaction, is observed in conc 3.
- Soln 1 Shows maximum change
- Conc 3, sol 1 is most reactive in comparison to the rest of the solutions in conc 1 and 2.

Future Work

Explore higher concentrations, time dependent response study, volume dispensed, etc.

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