

# Application of a Microfluidics System for Iron Detection in Water

Ngan Anh Nguyen<sup>(a)</sup>, Erica Forzani<sup>(b)</sup>, Aoife Morrin<sup>(c)</sup>, Margaret McCaul<sup>(c)</sup>

[a] School of Engineering for Matter, Transport, and Energy, Arizona State University [b] Center for Bioelectronics and Biosensors, Biodesign Institute, Arizona State University [c] Insight Centre and School of Chemical Sciences, Dublin City University

- Development of an autonomous sensing platform for iron detection in water (microfluidics channel, LED, and photodiode)
- Prototyping techniques: 3D printing, laser ablation and microfabrication
- Fluidic handling using pumps and solenoid valves, effective mixing using shear forces in serpentine channel
- Sensing is designed to incorporate sampling, automatic calibration, waste containment, and wireless communication
- The measurements are validated against the gold standard laboratory-based spectrophotometry method
- The method can also be compared with the membrane-based colorimetric sensor method

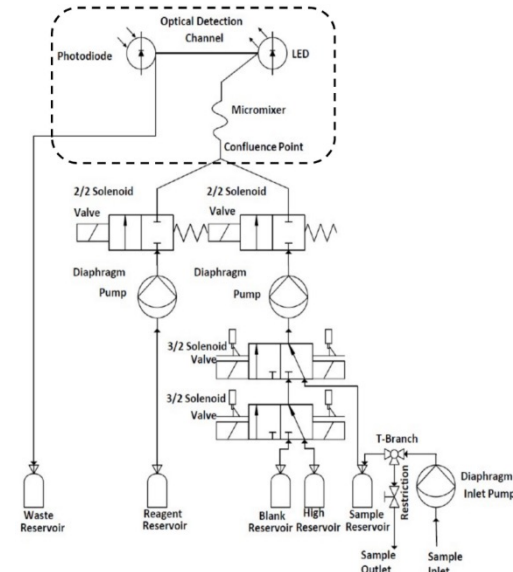


Figure 1: Sensing platform fluidic system<sup>1</sup>

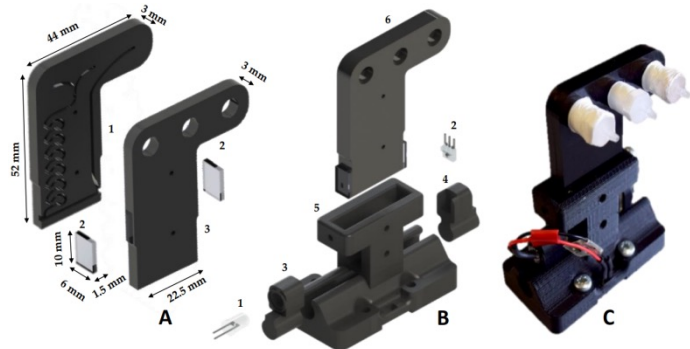


Figure 2: Fluidic chip<sup>1</sup>

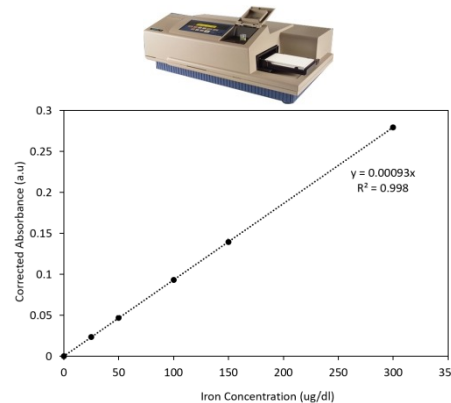
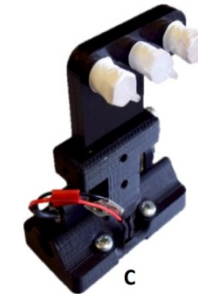


Figure 3: Spectrophotometric calibration curve



VS.



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[1] Donohoe A, Lacour G, McCluskey P, Diamond D, McCaul M. Development of a Cost-Effective Sensing Platform for Monitoring Phosphate in Natural Waters. *Chemosensors*. 2018; 6(4):57. <https://doi.org/10.3390/chemosensors6040057>

