

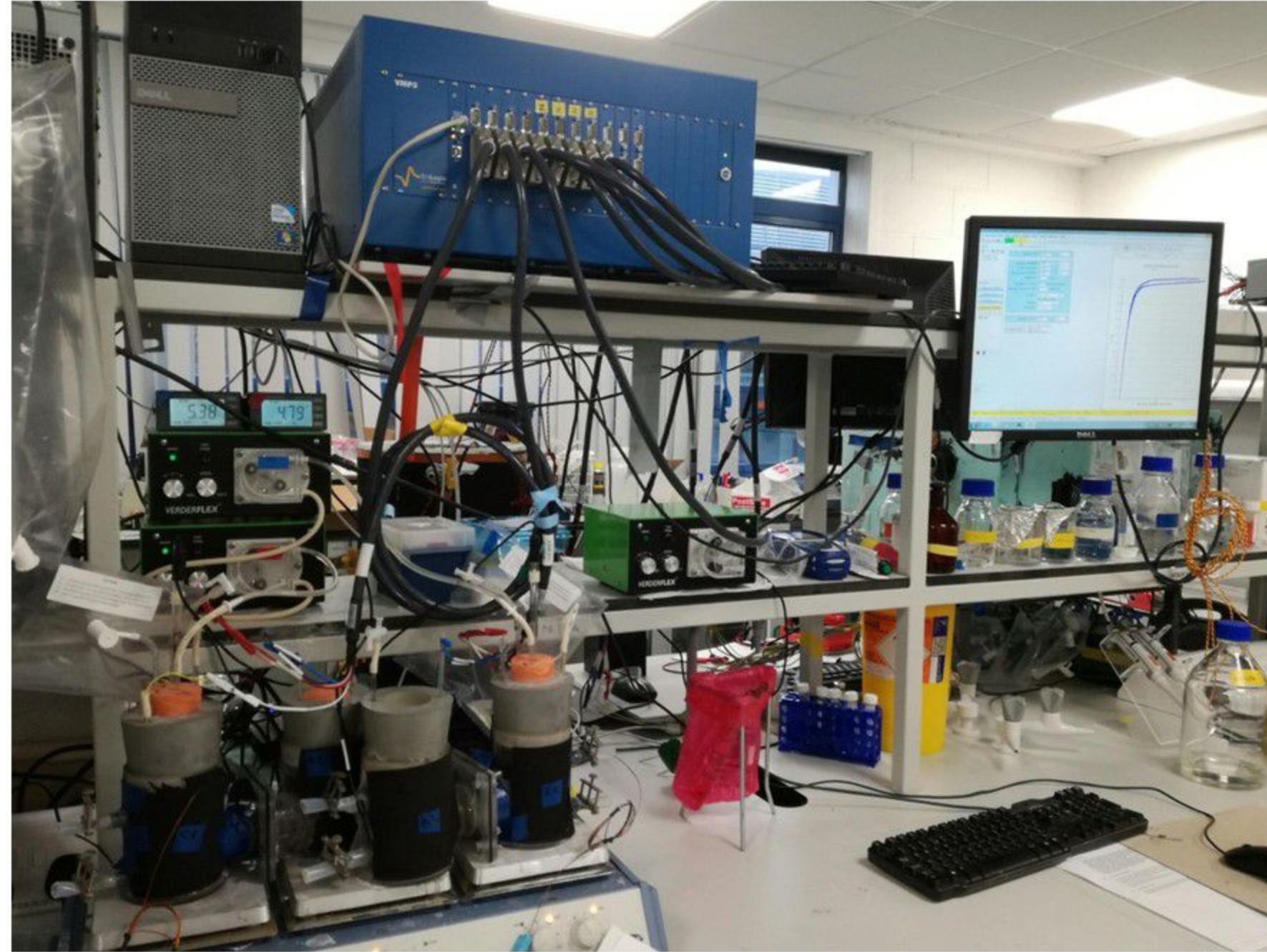
Bioprocess design

Biofuel production (H₂ & alcohols)

Bioelectrochemical systems

Automatic control

Nanoparticles



This set-up includes two bioelectrochemical cells that convert CO_2 to VFAs. Both cells include an anode and a cathode, divided by a proton exchange membrane. When a potential is applied, water is splitted abiotically to protons, electrons and oxygen. The electrons and protons migrate to the cathode via an external electric circuit and through the membrane, respectively. When supplying CO_2 at the cathode, electroactive microorganisms are able to uptake electrons from the electrode, and elongate CO_2 to VFAs.



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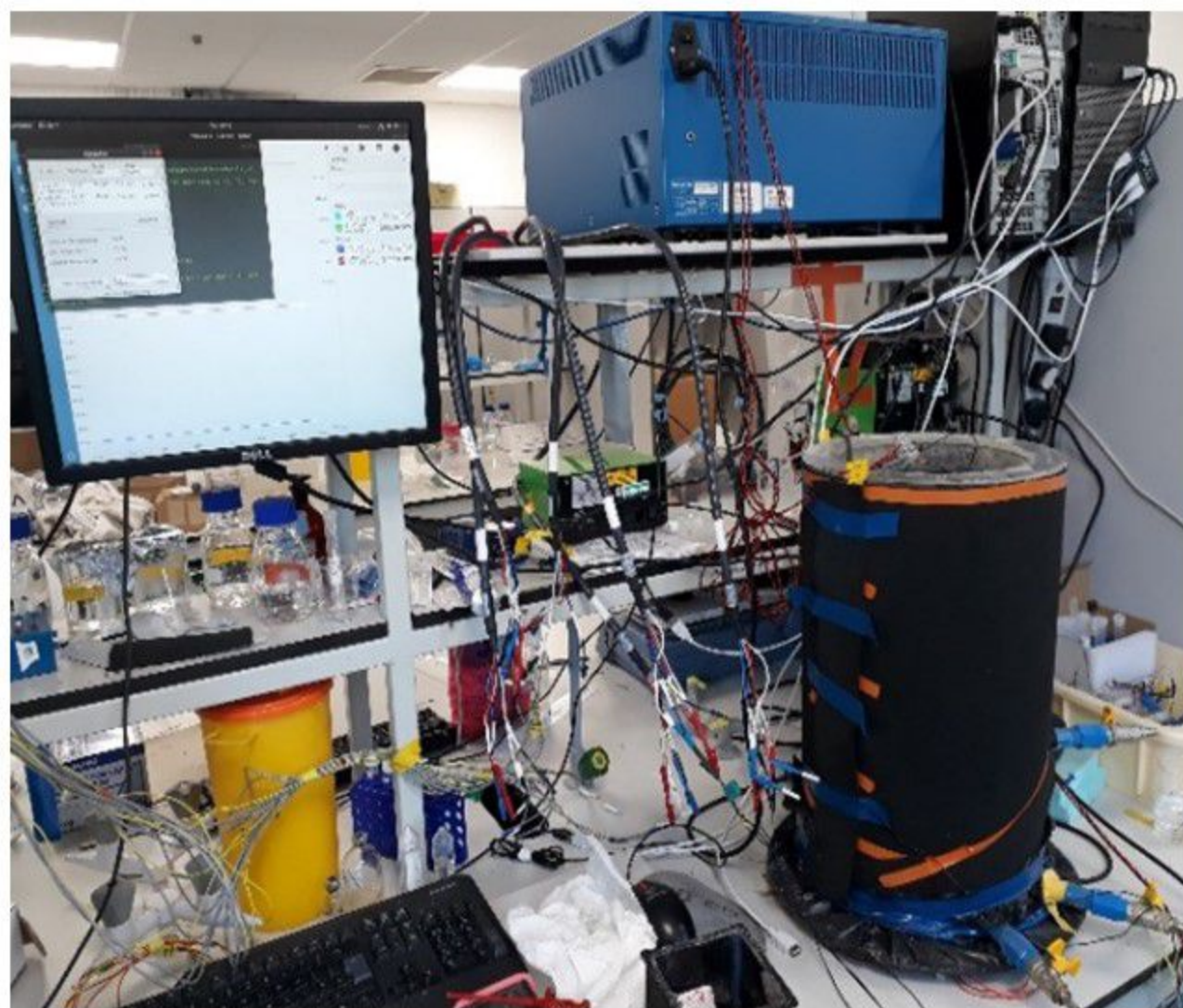


Cheese whey is fed to a temperature- and pH-controlled fermentor, and is converted to biohydrogen, CO₂ and VFAs. An extraction module, consisting on a tubular silicone membrane submerged into distilled water, is installed through a recirculation loop to extract the VFAs produced.

Our setup involves a computer for datalogging and control of the external hardware (OpenTCC, potentiostat and datalogger)



Controlled temperature experiments in the OpenTCC



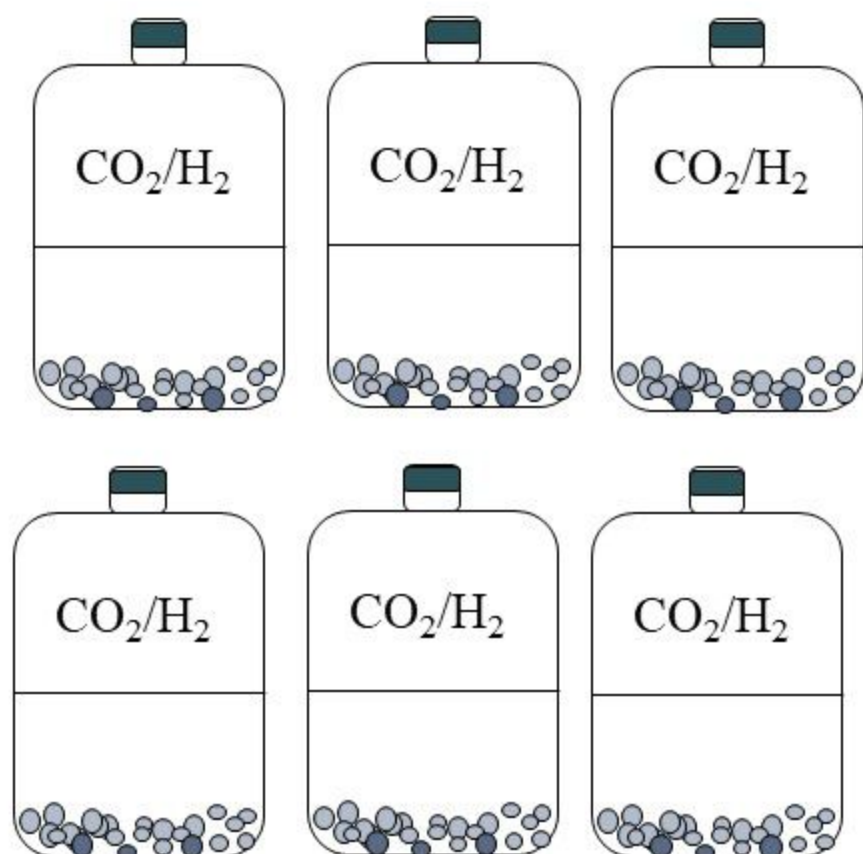
Ambient temperature experiment (sediment microbial fuel cell)



The electronic workshop allowing to develop new electronic circuits tailoring the control and measurement of parameters in microbial electrochemistry.



Yaxue He



- Temperature: 25°C, 37°C & 55°C
- Trace metals: Tungsten (W), Molybdenum (Mo), Nickel (Ni) & Zinc (Zn)
- Organic carbon source: Glucose
- Initial pH: 7, 6 & 5

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❖ Batch experiments were tested environmental parameters

❖ The enrichment is running at 25 °C in a UASB reactor using anaerobic granular sludge as inoculum