

Cell impedance sensor

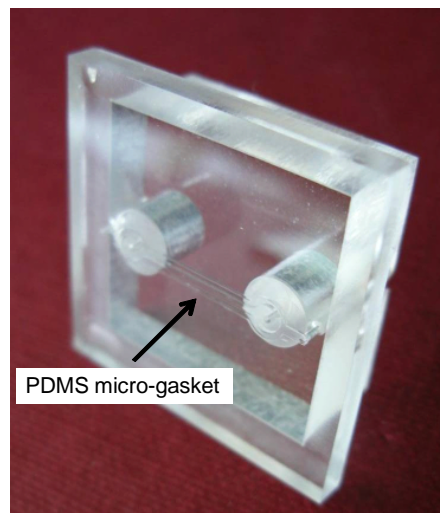
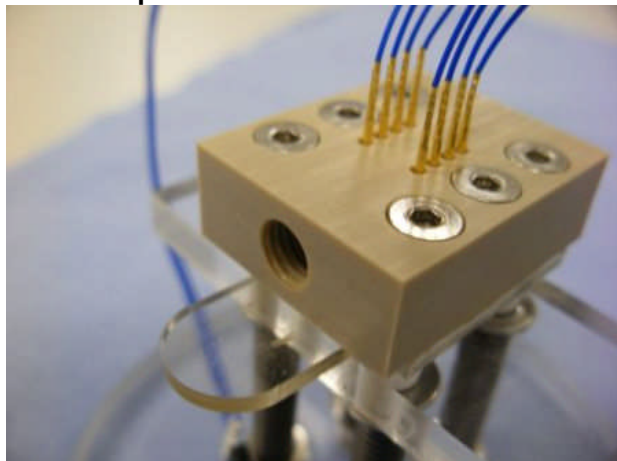


Figure 2: showing the micro-gasket seal

The cell impedance measurement test chamber shown above was developed for a project on cell based assays. The device uses a base plate (shown in figure 1 below) onto which have been made a series of inter-digitated gold microelectrode arrays. The width of the electrodes was 25 micron and the gap between them was 25 micron in this design. Electrical contact pads are arranged in rows above and below the sensing region. A top plate was made to go over the electrodes. The top plate contained a PDMS micro-gasket and fluid feed through holes (inlet and outlet). The top plate is shown in Figure 2. The micro-gasket is used to seal the test cell. Spring loaded pins pass through the top plate and contact to the electrodes.

Figure 3 shows an enlarged view of one of the sensor arrays after CHO cells have been settled on top of the electrodes. The impedance spectrum of the device can be recorded before and after settling to verify that the cells have settled onto the sensor surface (Figure 4). Changes in the impedance of the cells in response to chemicals passed through the flow cell can then be measured.

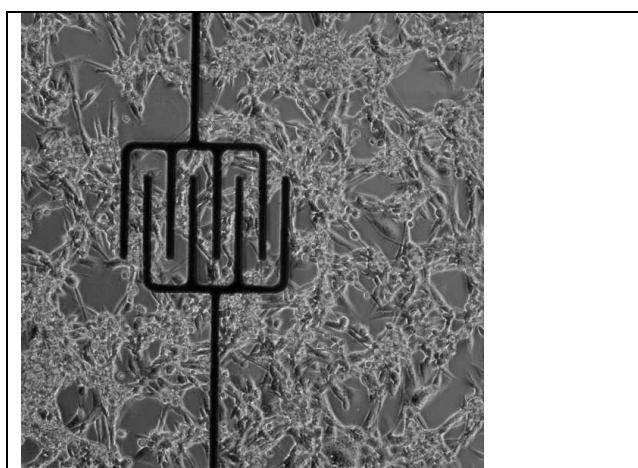


Figure 3: CHO cells settled onto surface of the electrodes, viewed in transmission.

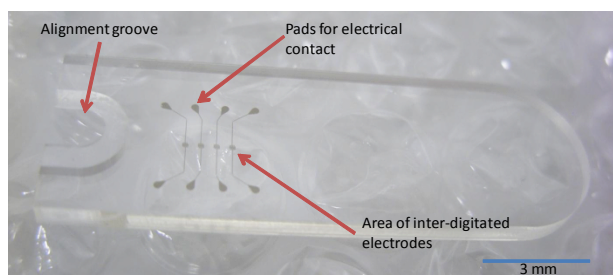


Figure 1: bottom plate with gold microelectrodes.

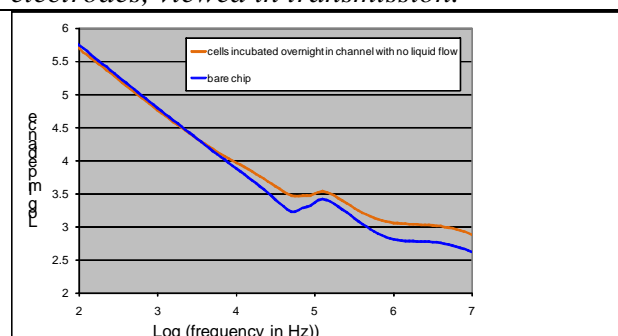


Figure 4: impedance spectrum

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