



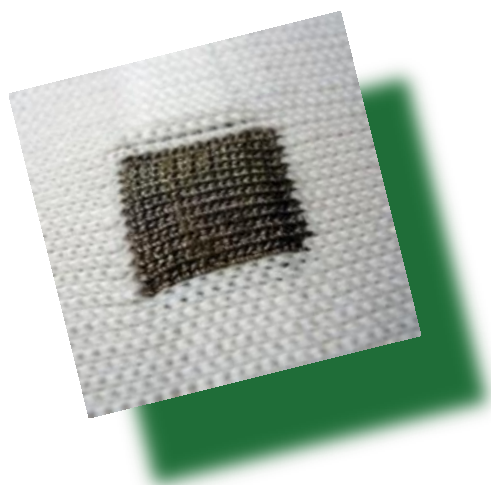
Haute Ecole de la Province de Liège

TEXTILE ELECTRODE

Medical Applications

ELECTROCONDUCTIVE TEXTILE

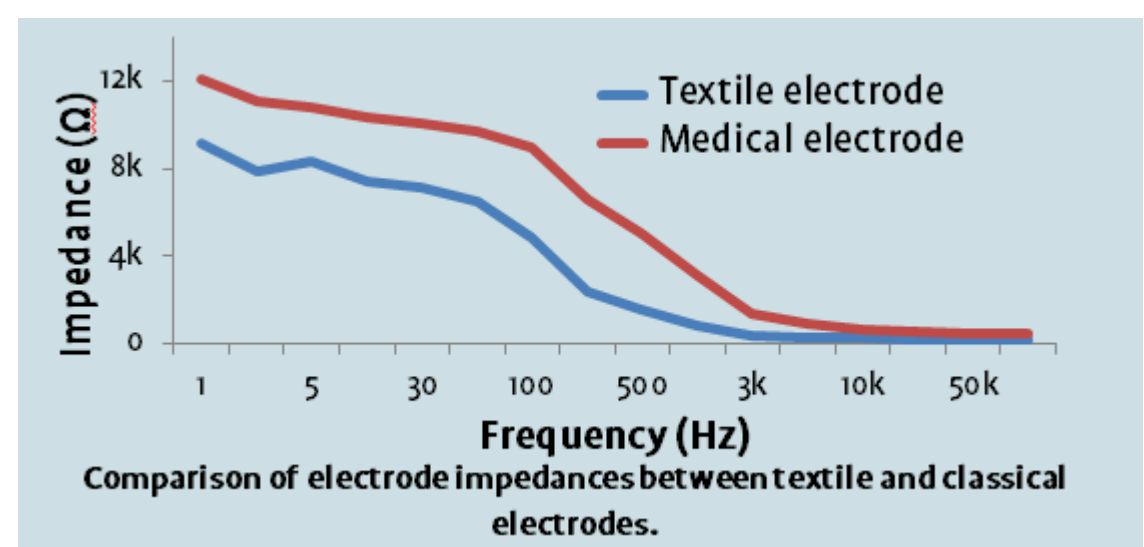
We used textile electrodes made of silver-coated polyamide fibers. These double knitted jersey electrodes provide good quality recordings. Several sizes and shapes were investigated to achieve the desired performances.



A simple textile electrode, made of knitted silver-coated fibres.

ELECTRODE BEHAVIOUR

We compared our electrode to a standard medical one. The following graph shows the impedance of the two electrodes both used in conjunction with gel.

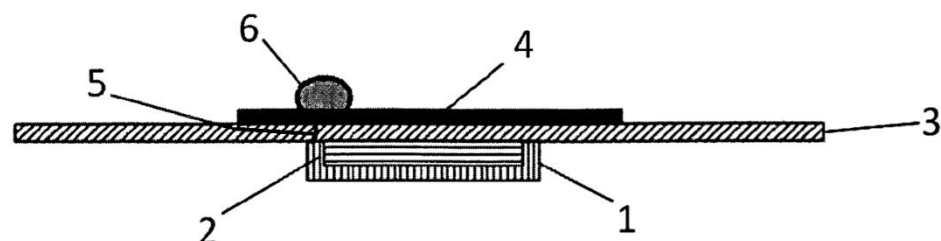


SURNISOM

Non-Invasive Sleep Monitoring

PATENT PENDING

Maintaining a good contact quality during an entire night is critical. In our first experiments, we noticed that the gel tended to evaporate within a few hours. To overcome this issue, we added an impermeable layer to the electrode. A patent is pending (WO 2012/007 384) for the electrode structure described below.



Multilayer structure of the electrode.

INTEGRATION IN A PROTOTYPE

Our electrodes easily fit in fabric prototypes thanks to their textile nature. The following pictures show these electrodes directly integrated in a prototype headband.

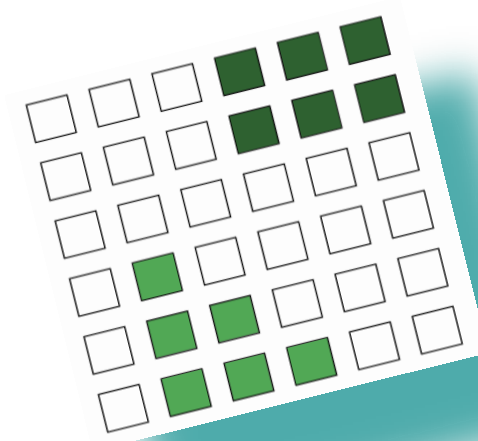


Prototype with textile electrodes.

CIPESTIM

Ceinture Intelligente Pour l'ElectroSTIMulation

Electrotherapy is a tissue processing technique that involves stimulating nerves or muscles using weak electric currents. Such treatment can relieve muscles or joint pain, improve physical surgery or regain muscle size after prolonged immobilization. The project CIPESTIM aims to achieve a smart belt TENS electrotherapy.



Principle of the matrix. By activating electrodes side by side, we can create larger effective electrodes and shapes.



Prototype panel containing 6 textile electrodes.