



**The Chinese University of Hong Kong**  
**Non-confidential Abstract of Technology Disclosure**

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**Title:**

**Bio-Sensor-Based Mobile Wireless Device for Physiological Signals Acquisition**

**CUHK Ref. No.:**

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**Inventor(s):**

Professor Yuan Ting ZHANG, Department of Electronic Engineering

**Patent Status:**

Chinese Patent Pending

**Non-confidential abstract:**

A mobile wireless device integrated with sensors for simultaneous acquisition of physiological signals and parameters, including photoplethysmogram (PPG), electrocardiogram (ECG), heart rate, blood pressure, and blood oxygen saturation (SpO<sub>2</sub>), is used. The device measures an optoelectronic signal and a bioelectric signal simultaneously in order to obtain a pulse transit time, which is then used in the real-time calculation of corresponding systolic, diastolic, and mean blood pressure values. Heart rate is calculated from the optoelectronic and/or bioelectric signal, while SpO<sub>2</sub> is calculated from the optoelectronic signal. The bioelectric and optoelectronic signals are sensed by a pair of electrically conductive electrodes and an optical transmitter-receiver assembly, respectively. Both the electrodes and optical assembly are located on the surface of the mobile wireless device. By touching the mobile device at one location with a finger of one hand to contact a conductive electrode, and simultaneously touching the mobile device at another location with a finger of the other hand to contact the other conductive electrode and the optical assembly, both bioelectric and optoelectronic signals are obtained. The obtained PPG, ECG, heart rate, blood pressure values, and SpO<sub>2</sub> value are displayed on the mobile wireless communication device during or after acquisition. These parameters can also be transmitted to remote medical facilities for further analysis. The device can also be used as a mobile phone.

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