Full Printed Flexible Capacitive Sensor for Non-contact

Respiratory Monitoring

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Abstract

Respiration is an important indicator of human health. Unusual respiratory patterns are a critical symptom of many diseases, such as sleep apnea hypopnea syndrome (SAHS), asthma, chronic obstructive pulmonary disease (CODP) and anemia.[1] At present, the detection of respiration mainly uses a resistive strain sensor. The sensor senses respiration through deformation, so it must be closely attached to the human skin, which is not only uncomfortable to wear, but also prone to skin irritation.[2, 3] In this paper, a highly sensitive capacitive sensor is prepared by full printed method. The sensor can be directly printed on the clothes, and the non-contact detection of respiratory can be realized by detecting small changes of the bioelectric field generated by the human body. [4] The maximum detection distance is 10 cm, and the relative change rate of capacitance caused by respiratory exceeds 0.2% when the detection distance is 5 cm. In short, this paper reports a new and promising sensor device for long real-time detection of respiratory.

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| C:\Users\Jeremy_liu\Desktop\呼吸-2_副本.png  Figure 1: Respiratory signals at different distances from the human body. |

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