

Graphene is a delicate single-layer, two-dimensional network of carbon atoms with ultrasensitive sensing capabilities. Lactic acid is important for clinical analysis, sports medicine, and the food industry. Recently, wearable and flexible bioelectronics on plastics have attracted great interest for healthcare, sports and defense applications due to their advantages of being light-weight, bendable, or stretchable.

We demonstrated for the first time the development of a flexible graphene-based bio-nanosensor to detect lactate. Our results show that flexible lactate biosensors can be fabricated on a variety of plastic substrates. We also designed an electrical biosensing method for 5-aminosalicylic acid (5-ASA) detection based on a graphene sensor on a micro-fluidic paper. 5-ASA is a bowel-specific aminosalicylate drug that acts locally in the gut and has its predominant actions there, thereby having few systemic side effects.

