

Future Opportunities for Advancing Glucose Test Device Electronics

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Abstract

Advancements in the field of printed electronics can be applied to the field of diabetes testing. A brief history and some new developments in printed electronics components applicable to personal test devices, including circuitry, batteries, transmission devices, displays, and sensors, are presented. Low-cost, thin, and lightweight materials containing printed circuits with energy storage or harvest capability and reactive/display centers, made using new printing/imaging technologies, are ideal for incorporation into personal-use medical devices such as glucose test meters. Semicontinuous rotogravure printing, which utilizes flexible substrates and polymeric, metallic, and/or nano “ink” composite materials to effect rapidly produced, lower-cost printed electronics, is showing promise. Continuing research advancing substrate, “ink,” and continuous processing development presents the opportunity for research collaboration with medical device designers.

J Diabetes Sci Technol 2011;5(5):1077-1086

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Abbreviations: (PET) polyethylene terephthalate, (pHEMA) poly-hydroxyethyl-methacrylate, (R2R) roll to roll

Keywords: flexible electronics, printed biosensors, printed electronics, printed sensing system, roll to roll, rotogravure

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