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TOPIC:

Paperfluidic devices for affordable healthcare

ABSTRACT:

There is a strong need for affordable and accurate disease detection in developing countries like India in order to provide good quality healthcare to the population. Microfluidics can help in miniaturizing diagnostic platforms so that these can be transported directly to the patient's bedside (i.e. at the point-of-care) from clinical laboratories. These systems are portable and battery-operated, provide quick results and consume much less patient sample compared to the bench-top systems currently in use. However, one of the biggest hurdles for large scale deployment of microfluidic technology in the healthcare sector has been its high cost. Over the last few years paper has emerged as a promising microfluidic substrate due to its low cost, abundance and ease of disposability. Paperfluidic sensors can wick fluids by capillary action without the need for any external pumping. Moreover, entire diagnostic assays can be printed on paper. In this talk I will give an overview of the paperfluidic devices available for various sensing applications, with a particular focus on healthcare.

PROFILE:

Debjani Paul is an assistant professor at the Department of Biosciences and Bioengineering, IIT Bombay. She received a PhD from the Indian Institute of Science, Bangalore, where she worked at the interface of engineering and biology to develop a portable thermocycler for DNA amplification. During her postdoctoral research at Curie Institute, Paris, and later in Cambridge University, she explored several label-free biosensing techniques and studied the physical aspects of salmonella infection. Her lab builds microfluidic devices for various healthcare applications with the hope of bringing diagnostics to the patient's bedside. Some of her current research projects include developing paperfluidic sensors for healthcare and environmental applications, detection of infectious diseases, sickle cell anemia, etc.