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Triboelectric effect as a novel tool for the development and application of point-of-care testing devices

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Triboelectric effect (TEE) is a theory related to contact electrification (tribocharging), which happens when two materials are brought into contact (by rubbing, for example) and then separated, creating electrostatic charges. The accurate mechanism of the charge formation is still a motive for debate and not completely understood, but these tribocharged materials may be useful as electrostatic masks for the construction of paper-based analytical devices (μPADs), besides being able to promote reversible electrostatic sealing in μPADs, which is of great importance in this type of device. PADs are an emerging class of point-of-care (POC) technology that has gain much attention in the past few years due to its simplicity and low cost. Despite the numerous advantages of this substrate, most of POC devices fabricated using this platform have the limitation of being directly exposed to ambient conditions, which may increase the risk of contamination and evaporation of the solvent/sample used in the analysis, proving the importance of sealing. The charged surfaces can also attract aqueous solution, delaying the fluid delivery and minimizing its evaporation. In summary, the main goal of this presentation is to show the possibilities of using charged surfaces as a versatile tool for the development of μPADs and other POC devices.

Biography

Everson Thiago Santos Geroncio da Silva has completed his PhD from State University of Campinas, Brazil. Presently, he is working as a Postdoctoral Researcher, where he is responsible for the area of development and application of point-of-care testing devices and conductive inks. He is the first author of the paper published in *Lab-On-A-Chip* journal (2015) regarding the use of triboelectric effect for sealing and controlling the flow in paper-based devices.

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