

Wearable Sensors of Flux from the Skin

John A. Rogers

Northwestern University, 2145 Sheridan Road, Evanston, IL 60208 USA

jrogers@northwestern.edu

Abstract:

Interdisciplinary research over the last fifteen years has established classes of advanced electronic and microfluidic systems that can conform to the soft, curved surfaces of the human body. Skin-interfaced, wireless wearable biophysical and biochemical sensors that leverage these technologies are now beginning to change the way that we approach patient care and health monitoring. This talk will briefly describe our on-going efforts in (1) microfluidic devices for collection, storage and biomarker analysis of microliter volumes of eccrine sweat [1,2] and (2) non-contacting sensors for quantitation of molecular gaseous flux into and out of the surface of the skin [3]. Highlighted activities span academic research to commercial translation.

Keywords:

wearables, sweat, transepidermal water loss, volatile organic compounds, wounds

References:

List and number all bibliographical references. When referenced within the text, enclose the citation number in square brackets, i.e. [1] (font Arial, font size 9, line spacing 1, spacing after 6 pt., alignment left)

- [1] A. Koh, et al, A Soft, Wearable Microfluidic Device for the Capture, Storage, and Colorimetric Sensing of Sweat, *Science Translational Medicine* 8, 366ra165 (2016); doi 10.1126/scitranslmed.aaf2593
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- [3] J. Shin, et al, A Non-Contact Wearable Device for Monitoring Epidermal Molecular Flux, *Nature* 640, 375-383 (2025). doi: 10.1038/s41586-025-08825-2