

# Low-cost Transducers Made of Fabrics

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Woven and non-woven fabrics such as cellulose paper and textiles, are low-cost, flexible, porous and generally biodegradable materials that are ideally suited for the fabrication of disposable sensors and actuators. [1-5] Unlike microfabricated (e.g., PDMS-based) microfluidic systems, printed microfluidics produced using fabrics do not require pumps and other complex components, allowing construction of highly compact, miniaturized devices for rapid, multiplex sensing of various bioanalytes (such as DNA) in the field. The intrinsic properties of cellulose fabrics (cellulose is a highly hygroscopic biopolymer) also enable measuring gaseous analytes in a completely new fashion. This new method of sensing gases allows monitoring respiratory activity in humans and detecting volatiles formed by the degradation of food to measure food freshness. Regardless of the application, devices produced using fabrics only require a series of simple methods of fabrication without the need for specialized facilities such as a cleanroom. In this talk, I will present our latest work on sensors and actuators created using fabrics and how they can enable new classes of low-cost technologies.

## References

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