Red Light versus Green Light

The Future of Optical Sensing in Wearable Devices



BSX Technologies Follow Aug 16, 2016 · 9 min read

The wearable industry is on the verge of a disruptive shift in the way devices measure human physiology enabling new devices to monitor previously invisible biosignals at an unprecedented level of accuracy.

The State of the Wearables Industry

The wearable device market is continuing to grow at a rapid pace and does not show any signs of slowing. According to IDC,

The worldwide wearable device market will reach a total of 111.1 million units shipped in 2016, up a strong 44.4% from the 80 million units shipped in 2015. By 2019, the final year of the forecast, total shipments will reach 214.6 million units, resulting in a five-year

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WEARABLE INDUSTRY SHIPMENTS BY QUARTER (millions of devices)

Since 2012 we've not only seen a proliferation of wearable devices–including offerings from the industry's biggest players like Apple, Fitbit, and Garmin–but we've also seen an increased reliance on sensor technology with compounding growth in the number of sensors per wearable device.

In fact, according to IDTechEx, the average wearable shipped in 2019 will have 4.1 different sensors—up from 1.4 in 2013. It's also expected that OHRMs will be included in over 90% of smartwatches sold by the end 2016.

With this proliferation of both devices and sensors, scrutiny is increasing as consumers race to find the most accurate devices. This demand for accuracy is a recent evolution since customers didn't use to have as many options in the early days that OHRMs were on the market. The technology was new, the number of devices were limited, and the excitement to be able to measure heart rate from something other than a chest strap was overwhelming.



The BSXinsight

We have spent the past 4.5 years focusing on extensive research and development that is positioning us to solve the two most pressing problems with wearables today: accuracy and breadth of sensing capability, including — for the first time ever hydration monitoring.

After four years studying sweat in our labs, LVL will be the next product to utilize our technology, measuring hydration like no other device can. It represents another radical shift in how people will approach their health and training, delivering unique insights by measuring what matters.

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THE FIRST EVER HYDRATION MONITOR

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We took the long view on wearables and developed what we knew would be a superior (albeit, more difficult) technology. Now, 4.5 years later, that bet is paying off. With the pressure that consumers are rightly applying on wearable manufacturers, the market is now scrambling to find a solution. Apple and Garmin have already begun integrating red light LEDs into their wearables, as they search for implementation strategies to solve the hard development challenges that NIRS poses.

Product leaps often require the development of new technologies. Classic examples are micro hard drives enabling the portable music player and capacitive touch screen technologies enabling the smart phone. In the case of hydration monitoring, low-cost, high brightness near-infrared LEDs with narrow linewidths are the technology advancement underpinning new product advancements, as these LEDs enable wearable monitors to look deeper into tissue while maintaining high accuracy.

For all these reasons we believe the future of wearables is bright. Bright red.

Wearables Healthcare Training Marathon Wearable Technology

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