

The Global Market for Flexible and Printed Electronics 2023-2033

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Abstracts

The electronics industry is moving towards the development of electronic devices with flexible, thin, and large-area form factors. Electronic devices that are fabricated on flexible substrates for application in flexible displays, electronic paper, smart packages, skin-like sensors, wearable electronics, implantable medical implements etc. is a fast-developing market. Flexible electronics encompasses lightweight, flexible and electronic sensing components and electronic devices built on stretchable substrates that are utilized in sensors, displays, wearables, E-textiles etc. They are manufactured on flexible plastic substrates, paper, textiles, or thin glass. Printed electronics is often considered a subset of the flexible electronics sector. It refers to the method used to create electronic devices by printing them on various (flexible) substrates.

The rapid boom in smart wearable and integrated electronic devices has stimulated demand for advanced intelligent systems with high performance, micro size, mechanical flexibility, and high-temperature stability for application as flexible and stretchable displays, personal health monitoring, human motion capturing, smart textiles, electronic skins and more. The key requirement for these applications is flexibility and stretchability, as these devices are subject to various mechanical deformations including twisting, bending, folding, and stretching during operation. The development of printed, flexible and stretchable conductors over the last decade has resulted in commercialization of flexible and stretchable sensors, circuits, displays, and energy harvesters for next-generation wearables and soft robotics. These systems must be able to conform to the shape of and survive the environment in which they must operate. They are typically fabricated on flexible plastic substrates or are printed/woven into fabrics.

The electronics industry is moving at a fast pace from standard, inflexible form factors to

stretchable and conformable devices. Printed, flexible and stretchable electronics products are increasing weekly from wearables for healthcare to smart packaging, sensors, automotive tail lights and displays, flexible displays, photovoltaics and more. Based on a new generation of advanced materials, printed, flexible and stretchable sensors and electronics will enable new possibilities in a diverse range of industries from healthcare to automotive to buildings. These technologies will drive innovation in smart medical technology, automotive, smart manufacturing, Internet of Things (IoT) and consumer electronics. Recent advances in stimuli-responsive surfaces and interfaces, sensors and actuators, flexible electronics, coatings and conductive materials has led to the development of a new generation of smart and adaptive electronic fibers, yarns and fabrics for application in E-textiles. Wearable low-power silicon electronics, light-emitting diodes (LEDs) fabricated on fabrics, textiles with integrated Lithium-ion batteries (LIB) and electronic devices such as smart glasses, watches and lenses have been widely investigated and commercialized. Smart textiles and garments can sense environmental stimuli and react or adapt in a predetermined way. This involves either embedding or integrating sensors/actuators and electronic components into textiles for use in applications such as medical diagnostics and health monitoring, consumer electronics, safety instruments and automotive textiles.

In the flexible displays market, electronics giants such as Samsung and LG Electronics have brought flexible, foldable and rollable smartphone, display and tablet products to the market. Wearable and mobile health monitoring technologies have received enormous interest worldwide due to the rapidly aging global populations and the drastically increasing demand for in-home healthcare. Commercially available and near commercial wearable devices facilitate the transmission of biomedical informatics and personal health recording. Body worn sensors, which can provide real-time continuous measurement of pertinent physiological parameters noninvasively and comfortably for extended periods of time, are of crucial importance for emerging applications of mobile medicine. Wearable sensors that can wirelessly provide pertinent health information while remaining unobtrusive, comfortable, low cost, and easy to operate and interpret, play an essential role. Battery and electronics producers require thin, flexible energy storage and conversion devices to power their wearable technology. The growth in flexible electronics has resulted in increased demand for flexible, stretchable, bendable, rollable and foldable batteries and supercapacitors as power sources for application in flexible and wearable devices.

Report contents include:

Current and developmental flexible and printed electronics based products.

Manufacturing and processes for flexible organic & printed electronics

Advanced materials utilized in flexible and printed electronics.

Market analysis including applications, products, companies and global revenues forecast to 2033. Markets covered include

wearables (smartwatches, sports & fitness trackers, sleep trackers & wearable monitors, smart glasses, workplace monitoring).

medical & healthcare sensors & wearables.

electronic textiles and smart apparel.

energy storage, generation & harvesting.

lighting.

flexible and printed displays.

automotive.

smart buildings.

smart packaging.

Profiles of over 900 producers and product developers in flexible and printed electronics. Companies profiled include AGFA, BeFC, Brewer Science, C3 Nano, Canatu, CHASM, Dracula Technologies, DuPont, Electroniks, Elephantech, Epicore Biosystems, FlexEnable, GE Healthcare, Heraeus Epurio, Inkron Oy (Nagase), Inuru, LG Display, Liquid Wire, NovaCentrix, Optomec, Panasonic, PowerON, PragmatlC, PVNanoCell, SmartKem Ltd., Syenta, tacterion GmbH, Tactotek, Tracxon, Xymox Technologies, Inc. and Ynvisible.

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