Wearable Electronics and Photonics

Description:

Integrating electronics into clothing is a major new concept, which opens up a whole array of multi-functional, wearable electro-textiles for sensing/monitoring body functions, delivering communication facilities, data transfer, individual environment control, and many other applications. With revolutionary advancements occurring at an unprecedented rate in many fields of science and electronics the possibilities offered by wearable technologies are tremendous and widespread. These advancements will transform the world and will soon begin to permeate into commercial products.

The first section of the book discusses the materials and devices used in the field, including electro-statically generated nanofibres, electroceramic fibres and composites and electroactive fabrics. It summarizes recent developments in electrically conductive fabric structures and puts together a few theoretical treatments of the electro-mechanical properties of various fabric structures. The next section reviews topics related to wearable photonics such as fibre optic sensors and integrated smart textile structures, the developments in various flexible photonic display technologies as well as looking at current communication apparel and optical fibre fabric displays. Next the book focuses on integrated structures and system architectures. Finally the issues facing a fashion designer working with wearables are explored.

Wearable electronics and photonics covers many aspects of the cutting-edge research and development into this exciting field and provides a window through which only a small portion of the exciting emerging technology can be seen. With contributions from a panel of international experts in the field this is an essential guide for all electrical, textile and biomedical engineers as well as academics and fashion designers.

Key features of the report

- Stay one step ahead of the industry on this hot topic
- Evaluates the major new concept of integrating electronics into clothing
- Explores future trends for fashion and specialist clothing
- Essential guide for all electrical, textile and biomedical engineers as well as academics and fashion designers

About the editor

Xiaoming Tao is Head and Chair Professor at Hong Kong Polytechnic University. Prof. Xiaoming Tao is Chair Professor and Head of the Institute of Textiles and Clothing. Graduating with a Beng in Textile Engineering and a first-class prize for undergraduate students from the East China Institute of Textile Science and Technology in 1982, She gained her PhD in Textile Physics from the University of New South Wales, Australia in 1987. Prof. Tao is an elected fellow of the Textile Institute International and the Hong Kong Institution of Textile and Apparel. She is a member of various professional societies including the Optical Society of America, the American Institute of Physics, the Institute of Electrical and Electronic Engineers, the Chinese Society of Textile Engineers and the Hong Kong Society of Materials Research and the Hong Kong Society of Theoretical and Applied Mechanics.

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