



Nanotechnology: Volume 4: Information Technology

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Rainer Waser (Editor)

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DESCRIPTION

This second of two volumes on applications in information technology is divided into two main sections. The first covers logic devices and concepts, ranging from advanced and non-conventional CMOS and semiconductor nanowire devices, via various spin-controlled logic devices and concepts involving carbon nanotubes, organic thin films, as well as single organic molecules, right up to the visionary idea of intramolecular computation.

The second part, architectures and computational concepts, discusses biologically inspired structures and quantum cellular automata, finishing off by summarizing the main principles and current approaches to coherent solid-state-based quantum computation.

ABOUT THE AUTHOR

Rainer Waser is Professor at the faculty for Electrical Engineering and Information Technology of the RWTH Aachen University and director at the Institute of Solid State Research (IFF) at the HGF Research Center Jülich, Germany.

In 1984, he received his PhD in physical chemistry at the University of Darmstadt, and worked at the Philips Research Laboratory, Aachen, until he was appointed professor in 1992.

His research group is focused on fundamental aspects of electronic materials and on such integrated devices as non-volatile memories, specifically ferroelectric and resistive memories, logic devices, sensors and actuators. Throughout, he has been

collaborating with major semiconductor industries in Europe, the US, and the Far East. He is member of the Emerging Research Devices working group of the ITRS.

He has organized several international conferences, published about 250 technical papers and holds ten patents. Among others, he has edited the book Nanoelectronics and Information Technology - Advanced Electronic Materials and Novel Devices, which has been published in 2003 by Wiley Inc.

Since 2002, he has been the coordinator of the research program Nanoelectronic Systems within the Germany National Research Centers (Helmholtz Association). In 2007, he has been co-founded of the Jülich-Aachen Research Alliance, section Fundamentals of Future Information Technology (JARA-FIT).

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