Metal Oxides Series

Solution Processed Metal Oxide Thin Films for Electronic Applications

Edited by **Zheng Cui**

Solution Processed Metal Oxide Thin Films for Electronic Applications discusses the fundamentals of solution forms of metal oxide material systems and processing techniques for key electronic device applications. The book introduces basic information (materials properties and synthesis), discusses ink formulation and thin film processing methods, including sol-gel and nanoparticle inks, printing and coating methods, surface functionalization, and presents a comprehensive accounting on the electronic applications of solution processed metal oxide films, including thin film transistors, photovoltaic cells, light-emitting diodes, and other electronics devices.

This is an important reference for those interested in metal oxide electronics, printed electronics, flexible electronics, and large-area electronics.

Key Features:

- Provides in-depth information on solution processing fundamentals, techniques, considerations, and barriers combined with key device applications
- Reviews important device applications, including transistors, light-emitting diodes, and photovoltaic cells
- Includes an overview of metal oxide materials systems (semiconductors, nanomaterials, and thin films), addressing materials synthesis, properties, limitations, and surface aspects

About the Editor:

Zheng Cui

Professor Zheng Cui graduated from the Southeast University, China, in 1981 and had his Master degree and Doctoral degree in electronic engineering in 1984 and 1988. In the field of micro and nanofabrication technologies, he published over 190 technical papers and 6 books. In 2009 after working in the United Kingdom for 20 years, he returned to China and founded the Printable Electronics Research Center (PERC) at the Suzhou Institute of Nanotech and Nanobionics, Chinese Academy of Sciences, which was then the first research center in China dedicated to printed electronics R&D. His research team at the PERC has conducted more than 50 research projects with research funding over 100 million RMB. In the past 10 years working in China, he has authored or coauthored over 90 journal papers and two books on the subject of printed electronics. In addition to academic research in printed electronics, Professor Zheng Cui also devoted to transferring technologies to industry. He has filed more than 70 patents in printed electronics. He and his team at PERC developed a novel hybrid printing technique to manufacture metal-mesh transparent conductive films. The invention won the Chinese outstanding patent award in 2014. The technology was subsequently transferred to a leading manufacturer of touch panels in China and implemented in mass production. Display panels integrating the metal-mesh transparent conductors as touch sensor have been commercialized and created over billions of market value. He is also the founder of two high-tech companies utilizing printed electronics technology in gas sensors and flexible electronic circuits and both have commercial products in the market.

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