Chapter 1

Introductory Chapter: Transparent Conducting Films

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1. Implementation and benefits of "Transparent Conducting Films"

There has been an increasing demand for functional films, which combine a film substrate with various features. However, the main research goal of the transparent conducting films (TCF) and materials has been rapidly promising to scientists as well as industries. This continuing transformation is taking place at all levels: technologies, applications, developers and suppliers. Owing to their processability, stability, and high conductivity, carbon nanotubes has received significant attention from electronics-industry researchers over the past several years as an alternative to ITO. As per current trends for transparent conductive films increases, transparent electrode materials alternatives to ITO and active research and development for commercialization of such materials are being conducted. Meanwhile, transparent conductive films that have conductivity while being transparent are heavily used as essential elements for touch panels of smartphones or tablets or transparent electrodes of solar cells or other products. In particular entitled book "Transparent Conducting Films", we provide the most comprehensive and authoritative chapters are based upon years of research as we have been tracking and analyzing TCF industry since 2008. Those useful chapters are listed below in contained book;

- Carbon nanotube transparent conducting film
- Carbon nanotube activated thin-film transparent conductor applications
- Conductive polymers in biosensors
- Nanocarbon-based transparent conducting films

Our expert team of reviewers and editors has also been independently analyzed and peer reviewed those individual articles to flourish emerging target applications. Indeed, most of the articles, particularly concentrated on OLED lighting, wearable technology, in-mold electronics, smart windows, OPVs, DSSCs, perovskites, and touch screens. This enables us to assess

the market from an application as well as technology point of view. The approach mainly the author used for fabrication is highly reproducible and creates a chemically stable configuration with a tunable tradeoff between transparency and conductive properties. In the new study, the contributors used an approach called colloidal lithography to create transparent conductive silver thin films.

If researchers would like to get specific knowledge on this topic from the beginning, the best advice would be to choose firstly the branch among an incomprehensible canopy of transparent conducting films and its various applied studies [1, 2]. The book aimed to show how the field is studied in different countries and what is common for all spectroscopic or microscopic investigations. The results from these experimental studies are very important outcomes of model experiments carried out on cultivating thin film techniques.

The phase, purity, stability and morphology of the composite and its constitutes have been also analyzed in those chapters. Hence, it possesses superior thermal properties and higher thermal stabilities of its layers [3, 4], qualifying it to be used in various thermo-electric devices [5] and photovoltaics. Indeed, the optical properties can be studied by utilizing optical absorption spectrum calculated optical energy band gap of the conducting film [6, 7]. The electrical parameters such as dielectric constant, tangent loss, AC conductivity as a function of frequency with fixed typical temperature also analyze.

The overall studies and investigated results in our individual chapter. Through the entire book in this year will get scope to learn more about the market trends, the key questions, latest prices, novelty of applications, e.g., transparent electrodes, flexible displays or wearable devices, OPV (organic photovoltaics) cells, light control glasses or films, organic EL lighting, transparent antennas, transparent electric wave shielding materials, and fine-tuned our analysis, insight and forecasts to reflect the latest research.

We also believe that it will be most help beginner research scholars, scientists, academicians in current understanding and advise them quite novel and non-standard approaches to find and decipher the mechanisms of transparent conducting film methodology and its application.

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