

**TITLE**

**Nanoparticle-based thin film devices and their applications**

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Due to the advantages of low-cost, reduced material consumption, and remarkable electronic, magnetic, catalytical as well as optical properties, the development of large-area nanoparticle-based thin films via rapid, straightforward, cheap, and high-reproducible methods which are suitable for the production of both spherical and anisotropic nanoparticles with unique properties hold widespread interest in recent decades. Focused on wet-chemical approach, electrodeposition method, and microwave irradiation technique, we successfully built stable nanoparticle based thin films and nanocomposite thin films, such as close-packed metallic nanoparticle monolayer films, CNT-nanoparticle nanocomposite films, hybrid nanoparticle/organic thin films, hybrid nanoparticle/oxides thin films, and etc. Advantages of these synthetic methods of forming nano thin films are improved process speed; reproducibility, efficiency, versatile, and the ability of easy control the surface properties for desired applications. Also, these thin film devices have been led to novel applications in chemical and biological sensors, organic photovoltaic's, solar cells, and flexible transparent conducting thin films, strongly contributing to biological and energy industries.

**Biography**

Wen-Yin Ko has completed her Ph.D from department of Chemistry of National Chung-Hsing University (NCHU), Taiwan in 2010. She is currently working at NCHU, as a postdoctoral fellow and focuses her research on advanced nanomaterials and their roles in technology, especially in catalysis, biosensor, and energy technologies.