

Transparent Conducting Oxides Thin Films for Optical Engineering

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Message from the Guest Editor

Dear Colleagues,

This Special Issue will highlight progress in the growth of transparent conducting oxides (TCOs) thin films and multilayers, as well as the understanding of the interplay between their structural, transport, and optical properties at a fundamental level. These materials have become ubiquitous in key modern technologies such as optoelectronics, photovoltaic cells, smart windows, light-emitting devices, photonics, all with a strong impact on the development of society.

The topics of interest for this Special Issue include, but are not limited to, the following research domains:

- New TCO materials, thin films, and multilayers.
- Non-stoichiometric TCOs.
- Surface and interface engineering.
- Conduction mechanisms.
- Optical absorption/emission processes.
- Insulator–metal transitions and correlated metallic state.
- Electron correlations in highly doped TCOs, plasmonic effects.
- p -type TCOs, such as delafossite oxides and oxychalcogenides.
- TCOs for low-loss metamaterials.
- High figure of merit p -type TCOs.
- Materials design by computational methods and machine learning.



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Message from the Editorial Board

Now more than ever, research is asked to deliver knowledge and technologies to solve the major challenges faced by our society. The development of new materials and devices for (without the ambition to be exhaustive) energy, health and food technology, together with the need for establishing processes that reduce the impact on critical resources and the environment, is indeed in the spotlight of most contemporary research. Surface science and engineering play a key role in this regard, with an incredible potential in delivering new and deep scientific understanding and technical solutions essential to solve most of the major societal challenges.

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