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Editorial: Topical issue “Nanomaterials for energy- and environment-related applications”

Emerging applications in energy-related and environmental fields currently drive high level research activities on oxide-based materials as well as on other energy related nanomaterials. The topical issue “Nanomaterials for energy- and environment-related applications” contain several papers focused on ZnO with photocatalytic applications, metal oxide cathodes for Li-ion batteries, and hybrid composites and kesterite materials for solar cell applications. These papers deal with a broad range of topics including material synthesis, defect engineering and applications of oxides and composites as well as theoretical approaches on fundamental properties such as the band gap of kesterites.

This issue has its origin in the Symposium M “Metal oxide- and oxyhydride-based nanomaterials for energy and environment-related applications” of the E-MRS Fall Meeting held in September 2019 in Warsaw, Poland. As the guest editors of this topical issue of Material Today Proceedings, we would like to thank the authors, reviewers and editors involved in this publication. The multidisciplinary and multinational interactions between materials scientists and technologists working in this field have been very valuable and we hope that readers will appreciate the informative papers in this issue.

Papers:

- Room temperature plasma hydrogenation – an effective way to suppress defects in ZnO nanorods
- Synthesis and analysis of metallic Zn phase rich ZnO oxide films for the photocatalytic water treatment technologies
- Effect of Mn, Ni, Co transition metal ratios in Lithium rich metal oxide cathodes on Li-ion battery performance.

- Enhancement of power conversion efficiency of an angular Luminescent Solar Concentrator employing a silica reinforced PMMA:CaSn:Eu²⁺ composite
- Influence of Si-nanoparticles on PEDOT:PSS properties for hybrid solar cells
- Electrical and optical properties of composite PEDOT:PSS-based thin films with NiO nanoparticles
- Temperature influence of internal parameters on solar PV cell
- Methods of estimations of the band gap for kesterite Cu₂ZnSnS₄ (Se)

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