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Editorial

Special Issue "New Advances in Novel Optical Materials and Devices"

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Optical material and devices play a key role in a considerable number of technological developments. The research in the field has shown no sign of slowing down in terms of the number of studies and their impact on the creation of new knowledge. This Special Issue includes two reviews and 10 original articles that contribute to the continuing development of novel optical materials and devices.

One of the reviews presents the work performed at the Electron Science Research Institute nano-fabrication laboratories, Edith Cowan University, Australia, on the synthesis and characterization of bismuth-containing ferrite-garnet-type thin-film magneto-optic materials of different compositions [1]. The other review discusses the multiplier effects of photodetectors and explores photodetectors based on inorganic materials, organic materials, and organic/inorganic materials as well as detection spectra from ultraviolet to infrared [2].

This Special Issue also includes two works that are devoted to the use of models. Ballester et al. use the holomorphic Tauc–Lorentz–Urbach function to extract the optical constants of amorphous semiconductor thin films [3]. Stenzel et al. use a model to calculate the reflectance of smooth and rough aluminum layers in the vacuum ultraviolet spectral range [4].

Darwesh et al. studied the structural and optical characteristics of biopolymer composites based on polyvinyl alcohol inserted with PbS nanoparticles. The work includes the study of optical properties such as optical transmission, surface reflection and absorption, and the analysis of the dielectric nature and refractive index of the films [5]. Matveeva et al. investigated the luminescent properties of polycarbonate methacrylates containing organic fluorescent dyads and established that the ratio of intensities of blue (450 nm) and green (535 nm) emissions is strongly dependent not only on the excitation wavelength but also on the length, flexibility, and polarity of the matrix oligomeric bridges [6].

Chen et al. synthesized and designed molybdenum and Cys-MoO_{3-x} nanoparticles for use in the minimally invasive treatment of papillary thyroid carcinoma. The authors showed that the nanoparticles are lethal to cancer cells under visible (405 nm) and NIR (808 nm) laser irradiation, making them suitable for photothermal therapy [7].

Kamegaki et al. mapped the absorbance of olivine micro-grains using a four-polarization camera [8]. Acosta-Silva et al. synthesized tetragonal ZrO_2 by the sol–gel method and dip-coating and found that it is photocatalytically active for the degradation of methylene blue [9]. The application of recycled gold nanoparticles in coatings for eyewear lenses was studied by Majerič et al. The authors concluded that there is an improvement in the light absorption and reflectance for blue and UV light, which may be evaluated as beneficial for the eyewear user [10]. Sahoo et al. report the enhancement of terahertz radiation with indium-tin-oxide thin-film deposited by e-gun evaporation on semi-insulating gallium arsenide substrate [11].

Ma et al. introduced a small number of $MAPbCl_3$ crystals into the sequentially deposited PbI_2 films to induce the growth of perovskite films. The authors were able to obtain perovskite films with high crystallinity, large grain size, and few defects, which are believed to contribute to the further development of perovskite solar cells [12].

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