PREFACE

The present special topic volume entitled “Glass Science and its Applications – II” covers on different glasses and glass ceramic materials for technological and biomedical applications. In this special issue, the first review paper reports on the linear and non- linear properties of different materials. The nonlinear phenomena which include intensity dependent on refractive index, excitation energy, dispersion energy, optical energy, metallization criterion, second and third harmonic generations have been discussed. Finally, the optical application, viz. photonics, electro- optics, photo chromic and magneto-optics of the material have been studied. In the second paper reports the visible-NIR luminescence and time-resolved emission spectral profiles of Nd^{3+}, and Er^{3+} doped silver zinc borate glasses. The steady state luminescence (SSL) and time-resolved emission spectroscopy (TRES) were used to evaluate how the randomness of the network can influence the emission from rare earth ions in the visible region. In third paper, As_2O_3 glasses were identified as the low-loss materials for long-distance optical transmission and CuO containing glasses are also draw special attention because of the p-type semiconductivity property. Therefore, Lead arsenate glasses containing different concentrations of CuO were reported. The optical absorption and luminescence studies have indicated that copper exist in both the valence states viz., Cu^{+} and Cu^{2+}. Further, there will be growing degree of structural disorder with increase in the content of CuO was observed. Alkali oxy borate glasses are well known due to their variety of applications in phosphors, solar energy converters and in a number of electronic devices. Glass system of composition Li_2O-Na_2O-B_2O_3: Fe_2O_3 with replacing alkali oxides one by another have been reported in fourth paper. Dielectric properties of these glasses have also been explored. The study on dielectric properties indicated that the ac conduction is predominantly ionic in nature in the samples containing high content of Li_2O. In biomedical applications, CaO-P_2O_5 based glass reinforced hydroxyapatite composite material for bone regenerative applications have been reported in paper five and six. Jaw cysts are common lesions in the maxillofacial area. Therefore, a case report of large cystic lesion of anterior maxilla and its treatment using a glass reinforced hydroxyapatite composite have been reported in paper five. Further, one year follow up demonstrated satisfactory clinical and radiological treatment outcomes. In paper six, the guided bone regeneration procedure using a glass-reinforced HA and collagen membrane in the treatment of an intrabony defect was reported. Authors hope that this special volume may be useful for those who are searching for a general overview of glass science and its applications in different fields.

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