Table 1. The characteristic parameters of $As_2S_3/Eu(TTA)_2(Ph_3PO)_2NO_3$ thin layers

The content of the compound $Eu(TTA)_2(Ph_3PO)_2NO_3$ in the composite, (%)	The bandgap energy of the compound, (eV)	Position of the dominant PL peak, (nm)	Integrated intensity of the PL (500–750 nm), (rel. un.)
0	2.45	–	–
0.02	2.45	612	250
0.10	2.48	614	800
0.20	2.52	613	1200
1.00	3.52	612	2500

References:

[1] V.I. Verlan, M.S. Iovu, I. Culeac, Y. Nistor, C.I. Turta, V.E. Zubareva. Photoluminescence properties of PVP/Eu(TTA)$_2$(Phen$_3$PO)$_2$NO$_3$ nanocomposites. Journal of Non-Crystalline Solids, 357 (2011) 1004–1007.

Artificial neural network analysis of thermally stimulated depolarisation currents in Sb_2O_3-WO_3-Li_2O-Na_2O glasses

O. Bosak[1], D. Maache[2], M. T. Soltani[2], P. Kostka[3], V. Labas[1], M. Kebisek[1], & M. Kubliha[1]

[1]*Faculty of Materials Science and Technology, Slovak University of Technology, Bottova 25, 917 24 Trnava, Slovakia,*
[2]*Laboratoire de physique photonique et nanomatériaux multifonctionnels, University of Biskra, BP 145, Biskra, Algeria*

[3]*Laboratory of Inorganic Materials, joint workplace of the University of Chemistry and Technology Prague and the Institute of Rock Structure and Mechanics of the CAS, V Holešovičkách 41, 182 09 Prague 8, Czech Republic*

Corresponding author: ondrej.bosak@stuba.sk

The mixed alkaline effect (MAE) is a well-known anomaly in glasses. It results in a non-linear response of various physical properties on mixing of alkali ions in the glass. In this work, the thermal depolarization currents (TSDC) were studied in antimony oxides based glasses $60Sb_2O_3$-$20WO_3$-$(20-x)Li_2O$-xNa_2O (in mol%) for x= 0, 5,10, 15 a 20. TSDC methods are standardly used for characterization of different types of polarization in solids. Experiments on investigated glasses were performed at different polarization temperatures (90-200 °C) and polarization periods (10-100 min). Artificial neural network were used for results analysis. Prepared numerical model could be used for description of influence parameters of polarization and optimization of next measurements oriented on activation energies of ion polarization connected with local transport of electrical charge, Li+ and Na+ ions in this case.

Acknowlegments

The authors acknowledge financial support by the Slovak Science Foundation, projects VEGA No.1/0238/17 and VEGA No.1/0235/18, the Czech Science Foundation, project No. 19-07456S, and by the Czech Academy of Sciences within the programme of a long-term conceptual development of research organization RVO 67985891.

Electrical and dielectric properties of glass system Sb_2O_3-$PbCl_2$-AgCl

O. Bosak[1], P. Kostka[2], D. Le Coq[3], S. Minarik[1], & M. Kubliha[1]

[1]*Faculty of Materials Science and Technology, Slovak University of Technology, Bottova 25, 917 24 Trnava, Slovakia,*
[2]*Laboratory of Inorganic Materials, joint workplace of the University of Chemistry and Technology Prague and the Institute of Rock Structure and Mechanics of the CAS, V Holešovičkách 41, 182 09 Prague 8, Czech Republic*
[3]*Université de Rennes 1, Institut des Sciences Chimiques de Rennes, Eq. Verres et Céramiques, UMR CNRS 6226, Bât. 10B - Porte 252, Campus de Beaulieu, 35042 Rennes, France*

Corresponding author: ondrej.bosak@stuba.sk

The glass system (Sb_2O_3)-$(PbCl_2)$-(AgCl) is interesting due to his potential application in the infrared part of the electromagnetic spectrum [1]. The $(Sb_2O_3)_y(PbCl_2)_{y-x}(AgCl)_x$ glasses, with y = 50 mol. % or 70 mol. %, and 5 mol. % $\leq$ x $\leq$ 25 mol. % were prepared by the melting-quenching method from high purity components. The prepared glass has a yellow to brown colour. The characteristic temperatures (*T*g and *T*x) have been determined. *T*g values decrease with the increase of AgCl content. DC and AC electrical conductivity, permittivity, and complex electrical modulus were measured in the temperature range from room temperature up to 200 °C in the frequency range between 0.2 and 10^5 Hz. Temperature dependences of the DC conductivity obey Arrhenius-like relation. The DC conductivity at constant temperature significantly increases with increasing AgCl and $PbCl_2$ content. The conduction activation energy decreases with increasing AgCl and $PbCl_2$ content from 0.98 eV up to 0.56 eV for $(Sb_2O_3)_{70}(PbCl_2)_{25}(AgCl)_5$ and $(Sb_2O_3)_{50}(PbCl_2)_{25}(AgCl)_{25}$, respectively. The influence of the composition on the AC conductivity values of glasses is similar.

Acknowlegments

The authors acknowledge financial support by the Slovak Science Foundation, projects VEGA No.1/0238/17 and VEGA No.1/0235/18, the Czech Science Foundation, project No. 19-07456S, and by the Czech Academy of Sciences within the programme of a long-term conceptual development of research organization RVO 67985891.