

Investigation of sol-gel glasses doped with lanthanide ions by spectroscopic, acoustic, and positron annihilation methods.

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Streszczenie

The results of optical spectroscopic (UV-Vis, absorption, and emission), acoustic (sound velocity of precursor solutions, the solvation numbers of ions in these solutions), and positron annihilation of glasses are presented and discussed for silica glasses obtained by the alcoholic sol-gel technique, doped with selected lanthanides and with some addition of ethylene glycol. The aim of these investigations was the determination of the local structure of glass close to lanthanide ions and its influence on the optical properties of the material. The results show that the existence of alcohol-glycol solvates in glasses decrease the number of empty voids in its structure as well as the size of the remaining ones. One can suppose that this is caused by cooperative interactions of glycol molecules with the network of hydrogen bonds of the glass.

Adres publiczny

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<http://www.ifpan.edu.pl>