# Preparation by colloidal route and optical properties of rare-earth doped NBS-glasses

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The colloidal method of obtaining of $Na_2O - B_2O_3 - SiO_2$ (NBS) glasses doped with rare-earth metal has been developed. The process of glass preparing included the followings steps: dissolving of boric acid into acetone and acetic acid mixture; preparation of sol-colloid system by adding of fumed silica (aerosil) into the result solution; adding of natrium as $Na(NO_3)_3$ and the salts of rare-earth elements. The reactives have been degree purity 99.99 %. The colloid was dried from room temperature up to 60 $^o$C with the following heat treatment in the muffle furnace at the temperature 1280-1350 $^o$C in 4-6 hour. The results of spectral investigations of obtained glasses doped with Ce- and Sm-ions (0,5-4 wt %) are examined. The absorption spectra of Sm-doped glasses are characterised by the number of narrow bands which are corresponded to intraconfigurational f-f transitions of $Sm^{3+}$ ions. The maximum absorption coefficient for $\lambda$=1,06 nm is about 2 cm$^{-1}$. That kind of glasses has a good perspective for using in $Nd^{3+}$ lasers pumping cavity systems as light filters for suppressing of superluminescence radiation which is making worse the density of population of high laser level in Q-switching regime. But their type of light filters has hardly any absorption in UV part of spectra. For this disadvantage eliminating it is supposed to co-activate this kind of glasses by Ce-ions, which have completely cut UV-radiation with $\lambda$ = 380 nm and re-radiated it in $\lambda$=450 nm.