# EXAFS studies of the local structure of bismuth centers in multicomponent silica glass based optical fiber preforms

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## Abstract

An Extended X-ray Absorption Fine Structure (EXAFS) analysis of the local structure of bismuth in silicate-glass based optical fiber preforms exhibiting broadband near-infrared luminescence is presented. The valence state of the bismuth ions in alumino-silicate and yttria-alumino-silicate glass hosts is revealed to be Bi3+ and the local geometry is suggested to be a trigonal oxygen pyramid with the electron lone pair positioned opposite to the oxygen atom plane. Furthermore we found that the incorporation of Y2O3 into alumino-silicate glass host does not result in any change in the surrounding Bi structure.