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Spectral-luminescent properties of siliceous films and powders activated with [$Ce^{3+}O_8H$:Tb^{3+}] nanoparticles

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Abstract

Nano- and microparticles of cerium dioxide having a cubic lattice with space group *Fm*3*m*, whose Ce^{4+} ions are partially substituted for Tb^{4+} and Tb^{3+} ions, are formed in the siliceous films and powders obtained with the help of the sol–gel technique. It is shown that saturation of the media with hydrogen leads to efficient sensitized luminescence from the $^5D_4$ state of Tb^{3+} ions due to the transfer of excitations from Ce^{3+} ions.