

Abstract Submitted  
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**Investigation of Optical Ceramic Materials Nd:PLZT at different Nd Concentrations and Temperatures**<sup>1</sup> LINZI WU<sup>2</sup>, XUESHENG CHEN, Wheaton College, Norton, MA 02766, GOKHAN BILIR, BALDASSARE DI BARTOLO, Boston College, Chestnut Hill, MA 02467 — This research is to examine optical properties of ceramic materials Nd:PLZT at different Nd doping concentrations and at different temperatures. These transparent ceramic materials doped with rare earth ions such as Nd can have important applications such as in high power or microchip lasers. We focus on absorption and luminescence studies of the transparent ceramic materials PLZT doped with Nd at 0.5%, 1%, and 2.5%, respectively, to study the concentration effect on the optical properties. Absorption spectra of the materials with different Nd concentrations are measured in the range of 250 - 3200nm to study at what Nd concentration and at what wavelengths the material can absorb efficiently. The samples are excited by an infrared diode laser at about 800nm to observe luminescence spectra in the range of 840 - 1140nm at different Nd concentrations. Luminescence spectra of 0.5% and 2.5% Nd doped PLZT are also measured at different temperatures ranging from about 33 to 300K. Detailed results and discussions on how the Nd concentration and the temperature affect the absorption and luminescence will be presented.

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