**8th International Workshop on Advanced Ceramics**

**September 17-19, 2018 Nagoya, Japan**

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**Title (Bold, 14pt): Optical properties and Judd-Ofelt parameters of Sm3+ doped BiO1.5-WO3-TeO2 glasses**

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**ABSTRACT (10.5pt):** Tellurite (TeO2) glasses are regarded as promising nonlinear optical materials which exhibit a high third-order optical nonlinearity, (3). TeO2-based glasses are very often reinforced by addition of either a second lone pair holder (Bi3+, Pb2+) or of cations with empty d-orbitals (W6+, Ti4+, Nb5+) [1]. So far, we studied BiO1.5 doping effect on third-order optical nonlinearities into WO3-TeO2 binary glasses and their structure. And we concluded that WO3-TeO2 binary glasses comprise two phases, tellurite molecular phase and WO3 cluster phase [2], and that higher third-order optical nonlinear susceptibilities was obtained when a small quantity of BiO1.5 content was added [3]. In this paper, we report photoluminescence (PL) properties of Sm3+ doped BiO1.5-WO3-TeO2 glasses. TeO2-based glasses have a possibility for higher luminescence efficiency due to their low phonon energy (~660 cm-1) and self-focusing effect. These glasses were examined by PL spectra, PL lifetime and UV-Vis optical absorption spectra. Judd–Ofelt (JO) theory was used to calculate phenomelogical JO parameters (*Ω*2,4,6), the spontaneous emission probabilities, the branching ratios, and the radiative lifetime of the state 4G5/2. From these parameters, we discuss the environment around Sm3+ ions and emission properties of Sm3+ ions in BiO1.5-WO3-TeO2 glasses.

**References**

[1] V. Dimitrov, T. Komatsu, *J. Non-Cryst. Solids* **249** (2002) 160.

[2] T. Sekiya, N. Mochida, S. Ogawa, *J. Non-Cryst. Solids* **176** (1994) 105.

[3] T. Fujiwara, T. Hayakawa, M. Nogami, J.R. Duclère, P. Thomas, *J. Am. Ceram. Soc.* **94** (2011) 1434.