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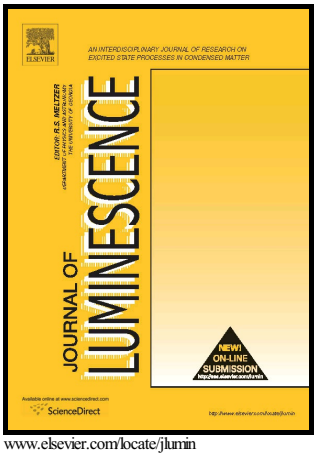

www.elsevier.com/locate/jlumin

PII: S0022-2313(18)30795-6
DOI: https://doi.org/10.1016/j.jlumin.2018.09.034
Reference: LUMIN15917

To appear in: *Journal of Luminescence*

Received date: 2 May 2018
Revised date: 13 September 2018
Accepted date: 15 September 2018

Cite this article as: Nilo F. Cano, T.K. Gundu Rao, Jorge S. Ayala-Arenas, Carlos D. Gonzales-Lorenzo, Letícia M. Oliveira and Shigueo Watanabe, TL in green tourmaline: Study of the centers responsible for the TL emission by EPR analysis, *Journal of Luminescence,* https://doi.org/10.1016/j.jlumin.2018.09.034

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Abstract

Electron paramagnetic resonance (EPR) studies have been carried out to identify the defect centers responsible for the thermoluminescence (TL) peaks in the mineral tourmaline. The mineral exhibits three TL peaks approximately at 170, 250 and 310 °C. The EPR spectrum of the green tourmaline sample pre-heated to 500 °C presented a large signal around g=4.3 due to Fe^{3+} ion. Room temperature EPR spectrum of irradiated green tourmaline shows the formation of two defect centers in the region of g=2.0. One of the centers (center II) with a g factor equal to 1.96 is identified as an F^{+}-center and is related to the observed high temperature 250 and 310 °C TL peaks. Center I exhibiting a doublet is due to hydrogen atoms (H^{0}), stable in the crystal lattice at room temperature and this center correlates with the TL peak at 170 °C of the green tourmaline. An optical absorption measurement also was carried out. Bands at around 430, 730 and 1100 nm have been observed.