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**PRODUÇÃO TÉCNICO CIENTÍFICA  
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EMPRÉSTIMO**

**THERMOLUMINESCENCE AND THERMALLY STIMULATED  
EXOELECTRON EMISSION OF PELLETS OF NATURAL BRAZILIAN  
TOPAZ**

EXO-2000

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The aim of the present work is to investigate the possibility of using the properties of the thermoluminescent emission (TL) and thermally stimulated exoelectron emission (TSEE) of pellets of colourless Brazilian natural topaz as a solid state dosimeter to detect contribution of different types of radiation.

Pellets of natural colourless topaz samples from Santo Antonio do Jacinto, Minas Gerais, Brazil, were used in this work. They were prepared with powdered topaz mixed with Teflon. The thermally treated topaz powder was mixed with Teflon in the 1:2 ratio (wt) and pressed producing pellets sizing 6 mm diameter x 1 mm thickness. Pellets were heat treated prior to irradiation at 300°C 1h in air then cooled down fastly to room temperature. Standardised fields of  $^{60}\text{Co}$ ,  $^{137}\text{Cs}$ ,  $^{241}\text{Am}$ ,  $^{90}\text{Sr}/^{90}\text{Y}$  and X-rays were used for irradiation.

The results indicate that the TSEE and TL increases as the energy of the photon and particles increases. This indicate that colourless topaz from Minas Gerais, Brazil, is a promise material for dosimetric application and it can be useful for personal dosimetry, dosimetry of the fields usually employed in radiotherapy, dosimetry of different radiation equipments and the dosimetry of accident.

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