

## RESUMO - CIÊNCIA DOS MATERIAIS

### **LUMINESCENCE PROPERTIES OF OPRH3W30 LUNAR SIMULANT SAMPLE**

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This study focuses on simulant minerals that represent lunar materials, aiming to assess their potential as ionizing radiation detectors. Selected simulant minerals, chosen based on similarities to actual lunar samples, were chemically characterized and subjected to ionizing radiation in laboratory experiments. The elements present in the sample were determined by XRF spectrometry using a Malvern Panalytical XRF spectrometer (model Zetium). To analyze the response of these minerals to radiation, we used optically stimulated luminescence (OSL), a physical phenomenon in which certain materials emit light when illuminated after radiation exposure. OSL measurements were performed using a Risø reader (model DA-20) equipped with a beta source 90S/90Y (dose rate 10mGy/s) for sample irradiation, and a Hoya U-340 filter (thickness 7.5 mm; transmission window 290-370 nm), no mask. OSL emission was stimulated using blue light-emitting diodes (470 nm) delivering 90 mW/cm<sup>2</sup> at the sample

position in continuous wave (CW-OSL) mode. The samples were irradiated with doses ranging from 0.25 to 5Gy. The XRF results showed that the major elements present in the sample are SiO<sub>2</sub> (43.9 %), Al<sub>2</sub>O<sub>3</sub> (27.9 %), CaO (17.9 %), Na<sub>2</sub>O (2.20 %), and MgO (1.18 %). The characteristics studied were dose-response and repeatability. The dose-response relationship was linear within this dose range under blue light stimulation ( $R^2 = 0.999$ ), and the repeatability showed a coefficient of variation of 3%.

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Palavras-chave: osl; lunar simulant sample; dosimetry.