



Contribution ID: 8

Type: **not specified**

Cr-doped Ga₂O₃ for radiation detection

Thursday 28 January 2021 11:40 (10 minutes)

In the field of radiotherapy, one of the major challenges is the accurate in-vivo measurement of the supplied radiation dose. In this context, chromium-doped gallium oxide is an interesting material due to its attractive electrical and optical properties. On the one hand, it is known to be a radiation hard, highly transparent wide bandgap semiconductor with fast scintillation. On the other hand, when irradiated with energetic ion beams, this semiconductor displays a red luminescence assigned to intraionic transitions of chromium at oxidation state 3+ within the first biological window that spans the range of wavelengths from 700 to 950 nm. Moreover, the yield of this red emission is enhanced by the defects that are created during the irradiation. Thus, this material presents a great potential for complementary systems of electric and optical dosimetry. The main purpose of this work is to understand the defect creation mechanisms and their role in the optical activation of the chromium ions, via ion beam-induced luminescence and thermoluminescence measurements, with the goal of developing an optical dosimeter.

Author: ESTEVES, Duarte (IST)

Presenter: ESTEVES, Duarte (IST)