

## **SWIFT–HEAVY IONS RADIATION DAMAGE STUDY OF SOME DIELECTRIC AND OPTICAL MATERIALS**

Radiation effects in functional dielectric and optical materials for EUROfusion applications (MgF<sub>2</sub>, LaAlO<sub>3</sub>, LiAlO<sub>2</sub> etc) as well as in some relevant scintillators for high-energy physics (Gd<sub>3</sub>Ga<sub>5</sub>O<sub>12</sub>, BaF<sub>2</sub>) irradiated by swift heavy ions with fluencies ranging from  $6 \cdot 10^{10}$  to  $2 \cdot 10^{12}$  ions/cm<sup>2</sup> have been studied. A stable strong induced absorption observed in the visible spectral range correlates with the irradiation fluence. It is shown that several structural point defects are responsible for this induced optical absorption. It will be demonstrated that the swift heavy ions irradiation strongly modifies the luminescence properties of considered materials, namely, their excitation spectra, which have been measured over a wide spectral range including vacuum ultraviolet diapason. The reasons leading to the alteration in the luminescence properties of irradiated single crystals are elucidated and discussed.

### **Section**

Energy and materials science (Section 2)

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