

Characterization of Some Irradiated Materials Using Spectroscopic and Related Methods

Sorin Ilie, Radu Setnescu

European Organization for Nuclear Research (CERN), CH-1211 Geneva 23, Switzerland

Perfluorohexane coolant and some polymer based electrical insulators used within High Energy Physics Detectors in the Large Hadrons Collider (LHC) at CERN were irradiated in different conditions and were characterized using spectroscopic methods (FT-IR, UV-Vis, chemiluminescence) together with GC and DSC methods. The aim of this work was the assessment of the radiation hardness, thus the service time of such materials. Their various radiation sensitivities during the irradiation process were explained as a function of oxygen together with known impurities presence and the content of specific protective molecules.