

[10/09/2014 - P071]

Study of a Li⁺ doped CsI scintillator crystal like a neutron detector, TUFIC MADI FILHO, MARIA DA CONCEIÇÃO COSTA PEREIRA, JOSÉ ROBERTO BERRETTA, *IPEN/CNEN-SP*

The radiation monitoring system is important requirement in the premises of a nuclear reactor. A variety of types of radiation (neutrons, gamma, beta and fission products) exist in a reactor, associated to the broad energy spectrum of these radiations, implies the need to use a range of detectors to operate in system operation and security reactor and radiological monitoring. As the neutron sources are associated to gamma radiation, it is necessary that the neutron detecting system be capable to discriminate the gamma interference. In our work environment we have two Nuclear Research Reactors and neutron irradiator with two AmBe sources (592GBq of Am each). These conditions warrant the development of new types of detectors. Due to the absence of charge in the neutron it is necessary to use a material converter that generates radiations capable to produce signals in the detector. Materials with high cross section like Li or B are use to this. The Li doped CsI crystal is being studied. The concentration of the lithium doping element (Li) studied was 10⁻³M at 10⁻²M. Was studied too the boron cover. The detector test was made using an AmBe source (37GBq) and gamma sources. The crystal was coupled in a photomultiplier and in a photodiode.