THERMAL NEUTRON FLUX MEASUREMENT AT PNEUMATIC TRANSFER SYSTEM (PTS) OF REACTOR TRIGA PUSPATI (RTP) USING NEUTRON ACTIVATION ANALYSIS (NAA)

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ABSTRACT

THERMAL NEUTRON FLUX MEASUREMENT AT PNEUMATIC TRANSFER SYSTEM (PTS) OF REACTOR TRIGA PUSPATI (RTP) USING NEUTRON ACTIVATION ANALYSIS (NAA)

PUSPATI TRIGA Reactor is the only research reactor in Malaysia started its operation in 1982. It has conducted many research and analysis in nuclear and medical science. One of them is neutron flux measurement analysis by using Neutron Activation Analysis (NAA). The sample used is Au-197. The samples are prepared in the form of bare Aurum (Au) and Aurum covered with Cadmium (Cd). Irradiation of samples takes place at Pneumatic Transfer System (PTS) of PUSPATI TRIGA Reactor. After irradiation process, the counting of sample which is the decay is measured by using high-purity germanium (HPGe) gamma detector. The efficiency of detector will determine the precision of the neutron flux. When the distance of detector is increased the Aurum efficiency is decreased exponentially. Neutron Activation Analysis is the method used in nuclear field to determine the concentration of element in a wide amount of materials. The neutrons will bombard the elements or samples caused activity of radioactive samples can be determined. The formula of neutron flux is used to determine the thermal flux conducted in PTS. The experimental result give out the thermal neutron flux at PTS is 5.75 x 10^{11} ncm^{-2} s^{-1}. It is quite accurate to calculated result which is at 6.0 x 10^{11} n$cm^{-2}s^{-1}$.

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