

Nuclear Instrumentation for Detecting, Monitoring and Measuring Radon Gas Level in Ambient Air

by Rida SN Mahmudah, R. Yosi Apriansari, WS Brams Dwandaru, Azzam Zukhrofani Iman, Dhani Nur Indra, Ahmad Faisal Harish

ABSTRACT

This research is aimed to design system to detect, monitor and measure radon gas level in ambient air, which can be conducted at laboratories, homes and open space. The research was begin in June and ended in October 2017 and was mainly conducted at Instrumentation and Signal Laboratory, and Atom and Nuclear Physics Laboratory of Physics Education Department Universitas Negeri Yogyakarta.

Building the detection system was divided into three steps, i.e. designing the system, building the detector and the last was testing the detector. The research was began by doing literature study and observation to obtain information about available home-made radon detector. Based on this observation, a detection system consists of amplifier and ionization chamber was designed and was tested by using Proteus software. After showing a promising result, the designed was then realized with the real circuit components.

This research has resulted in a coupled amplifier-ionization chamber system to detect radioactive decay activity in surrounding air. The detector testing step shown that there are still improvement that need to be made in order to get a better detection capability.

Kata Kunci: *radiation detector, radon, radioactive decay, ionization chamber*