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## **Development of a New Ambient Dosimetry Monitor Associated with a Software Interface for in situ Environmental Monitoring at the Nuclear Studies Centre of Maâmora- Morocco**

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In this paper, we propose the development of a new data logger system for monitoring the radiation environment in situ of Morocco nuclear studies centre.

This device is used to measure continuously the  $\gamma$ -dose rate for plotting and monitoring ambient radioactivity, and equipped with an alert system to alert the operator in cases which exceed the dose rate threshold limits. It mainly consists of a high-pressure ionization chamber whose response is directly proportional to the ionization intensity created by the radiation.

This paper details the development stages of a radiation datalogger which is associated to a specific monitoring interface for remote measurement of ambient  $\gamma$ -radiation. It starts first with studying the relationship between the dose rate and the output ionization current of the HPIC chamber, followed secondly by the development of digital processing unit for measuring and data recording, and thirdly finishes with the development of a data transfer module, using an XBee protocol of RF transmission, to the host computer. In addition, this paper presents also new software which is associated to the datalogger device, used as data acquisition interface, and was designed and characterized by specific parameters for real time remote monitoring of  $\gamma$  ambient dosimetry.

In fact, environmental radiation dosimetry has been performed with a high-pressure ionization chamber which supplies a current directly proportional to the amount of the incident particles energy. The output ionization current is of the order of  $10^{-14}$  A/Gy/h per cubic decimeter, equivalent to energy absorption of  $10 \mu\text{J}/\text{h}$  and per gramme of the chamber material. This current is DC coupled first to a preamplifier where it passes through a high ohmic resistance of  $10^{10} \Omega$  to establish a difference of potential, and followed by a negative feedback linear amplifier circuit.

The output of this amplifier is then connected to the electronic module for digital data treatment and transmission to the acquisition software installed into PC.

**Country/Organization invited to participate**

Morocco

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