

Single Photon Air Analyser

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Gas and particulate analyzers are a group of devices used to measure and monitor the concentrations and sizes of gas or particulates in a volume. These devices have numerous applications from providing adequate safety to the working personnel in petroleum, chemicals, and power industries, to air quality monitoring and forest fire detection. Despite the ongoing researches in this field, the current systems are either both bulky and expensive or have low accuracies.

This research work is aimed at developing a high accuracy, low power, and cost-effective particulate analyzer sensor based on the single-photon UV detectors used for particle physics experiments. The sensor works based on the Mie scattering theory and it comprises a 265 nm UV LED light source, an enclosure for guiding the light, and SiPMs located at different angles around the scattering volume. This paper summarizes the promising results for the first prototype of the Single Photon Air Analyzer.

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