

Development of a compact, low-cost measurement device for air pollutants that can be deployed at multiple points in remote locations, to solve air pollutions from agricultural residue burning

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We are developing an ultra-compact and low-cost measurement device for air pollutants such as PM2.5, O_x, CO, and NO_x that can be deployed at multiple points. We will also deploy many of them in rural and urban areas of India in the "Aakash" project of the Research Institute for Humanity and Nature to analyze the mechanism of large-scale air pollution caused by rice straw burning. The system is capable of automatic data collection using cell phone lines and constant operation with solar power panels, and has performance suitable for multi-point deployment. We are also conducting comparative verification with large measuring instruments. Large measurement devices are expensive and have been installed only in limited areas such as densely populated areas. As a result, it is not possible to fully understand the distribution of air pollutants and their emission sources. We are developing a low-cost device that can be installed in a large number of locations to obtain in-depth observation data necessary for reducing air pollution. As a continuous air particle monitor to measure the concentration of M2.5 particulate matter, we use a PM2.5 analyzer that is small enough to fit in the palm of one's hand and is capable of real-time measurement, which was developed in collaboration with Panasonic Corporation (Nakayama et al., 2018, doi.10.1080/ 02786826.2017.1375078). In terms of performance, it is as accurate as larger instruments.

Keywords: PM2.5, Instrument, Atmospheric pollutant, Small sensor

**Our instrument for PM2.5 and pollutant gases
specially designed for the Aakash project**

