

Proposal of a portable particle size analyzer by a spatial filter velocimetry for a field work of geoscience.

SATO, Fumiaki^{1*} ; SASAKURA, Daisuke¹

¹Malvern instruments A division of Spectris Co., Ltd.

1.Introduction

The existing popular approach at geoscience to measure particle size analysis is a sieving technique. The sieving has advantages such as portability, robustness and easy to understand. The drawback of the sieving are low resolution to particle size, require of a long period of time to measure and bulky equipment. Therefore, real time analysis, compact equipment, wide range and high resolution methods may be preferable at the recently geoscience research. One of approach to respond to this issue is a inline particle analysis by spatial filter velocimetry (SFV) method. SFV method is one of application of light blocking (obscuration) methodology, and it has capability to wide range particle size measurement such as in micron to centimeter with a several decade second. This approach has capability to investigate sample in nature, such as a cray, sand and a sea soil on anywhere. This report will propose to capability and application to particle size analysis for geoscience by SFV method.

2.System

A Parsum (Malvern Instruments) was proposed to this application. The advantages of this device are compact, lightweight , battery drive is possible and a calibration free. The specification of particle measurement range is 50 to 6,000um which is sufficient to generally geoscience application.

3.Feasibility study

It was shown that schematic picture at feasibility study in Fig.1. This application is real time monitoring powder transportation in the field of certain industry. It was comparable study between the sieving with intermittently sampling and SFV method with real time monitoring. As result of volume fraction in 150um were 64.2% by SFV method and 57.4% by sieving . This meaning is similar result in both methods.

4.Conclusion

This report will propose other applications for field work in this study.

Keywords: Real time inline particle analysis, Portable particle size analyzer, Sieving technique, A field work of geoscience., A spatial filter velocimetry

