

Examination of depositional processes of marine sediments by circulating grain-size analysis

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Grain-size analysis of sediment samples has been a practical and efficient sedimentological tool that quickly provide a number of interrelated sediment parameters. It can be particularly powerful in studying the textural characteristics, formative processes, and classifying sedimentary environment. However, recent advances in the understanding of diverse processes of transportation and deposition of grains suggest that grain-size distribution in sediment samples are not necessarily represent the depositional processes of sediments. In particular, as the grain-size analysis of aggregated sediments of fine clastics provide the size of component grains in aggregates, but not the size of aggregates, difficulty is remained in the understanding of depositional processes of such sediments based on the grain-size analysis. Improved measurement technique of grain-size in sediment is necessary for gaining a better understanding of transportation and deposition of sediments by grain-size analysis.

In this study, we developed a circulating grain-size analysis technique that enabled the analysis not only size aggregate, but also the size of component grains in aggregate. Analysis of both aggregate-size and their component grain-size is useful for the constraining depositional processes and physical properties of sediment samples. In this presentation, we will correlate the results of classical grain-size analysis and our improved technique for grain-size analysis, and also the potential of circulating grain-size analysis for the examination of various formative processes of sediments.

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