



## **Potential of the compound specific isotope analysis of individual amino acid for studying past nitrogen cycle**

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The nitrogen isotope ratio of bulk sediment has been widely used for studying nitrogen cycle in the marine environment. However, since organic nitrogen in sediment is regarded as a mixture of organic matter, it is challenging to identify its exact sources. Recently, compound specific nitrogen isotope analysis of amino acid (CSIA AAs) has been introduced as a potential tool for complement of bulk nitrogen isotope since amino acid more directly reflects information on primary producer and trophic position. However, studies on CSIA of amino acid in sediments are scarce due to the complexities of the analytical method and relatively high analytical cost. In this study, we established a method of the CSIA AAs which is more suitable for the analysis of sediments and assessed if the CSIA AAs can be used for the study of past nitrogen cycle.