

## 南極縁辺海堆積物の正確な年代決定のための脂肪酸放射性炭素年代

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### **Radiocarbon dating of sedimentary fatty acids as a method for determining precise chronology of Antarctic margin sediments**

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Radiocarbon dating of total organic matter in the sediment has been extensively applied for the development of chronologies of Antarctic margin sediments deposited in the late Quaternary (*e.g.*, DeMaster et al., 1996; Licht et al., 1996; Domack et al., 1999). However, the problems of radiocarbon dating of total organic matter in the Antarctic margin sediments are three fold. First, the reservoir age of dissolved inorganic carbon (DIC) in the surface mixed layer is much older than that of the other oceans due to exchange with deepwater. Secondly, Antarctic margin sediments generally lack calcareous foraminifera, which are conventionally used for radiocarbon dating and as stratigraphic tools (*e.g.*, through oxygen isotope analyses). Thirdly, the sediments are subjected to significant “contamination” of relict organic matter eroded from the Antarctic continent (Licht et al., 1996; Andrews et al., 1999; Ohkouchi and Eglinton, 2006, 2008) or supplied *via* sediment redistribution, leading to substantially older radiocarbon ages of bulk sedimentary organic matter. To overcome these problems, Ohkouchi et al. (2003) radiocarbon-dated individual C<sub>14</sub>, C<sub>16</sub>, and C<sub>18</sub> fatty acids isolated from Ross Sea sediments, and found this to be a promising approach for determining precise chronologies of sediments in these depositional settings. Since then, we have improved the analytical techniques to isolate fatty acids from the sediment and small-scale radiocarbon dating (Yokoyama et al., 2010; Ohkouchi et al., submitted), and applied the method to many sediment cores. In the presentation, we will overview the principles of this method, our recent improvements on these analytical methodology, and then, briefly show some applications that substantially improve our knowledge on the paleoenvironmental changes in Antarctic margin sediments.