Chapter 9
Preparation for Radiocarbon Analysis

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9.1 Introduction

This chapter presents a brief overview of the steps required to prepare a sample for radiocarbon (^{14}C) measurement by accelerator mass spectrometry (AMS). These include the following: (1) collection of an appropriate sample that can answer the question being asked; (2) pretreatment of samples to isolate the most representative fraction of the bulk carbon (C) or to separate total C into different components; (3) conversion of C in the sample to CO_2 and/or graphite for measurement by AMS; and (4) assessing errors, especially those associated with ^{14}C contamination that occur during processing.

Careful sampling and adequate pretreatment (physical and/or chemical) are very important stages of the ^{14}C measurement process and are critical for interpreting the data. As we have seen in Chap. 3, ^{14}C measurements of homogeneous pools are interpreted differently from those of heterogeneous (mixed) C pools. The same principles apply to ^{14}C measurements of individual samples. To properly interpret results, one must understand if the sample represents a closed, homogenous system or an

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