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Contribution ID: **106** Contribution code: **SPT-6**   Type: **Oral Presentation**

A tree-ring cellulose extraction device adapted to radiocarbon analysis

Thursday, 24 October 2024 11:20 (20 minutes)

Tree-ring cellulose is a commonly used material for radiocarbon analysis. Extracting cellulose is labor-consuming and several devices that enable batchwise extraction have been developed. However, these devices bear the risk of sample contamination. The present study describes a new device which improves upon two aspects of currently available devices. First, to prevent cross-sample-contamination, we redesigned the drainage module to enable independent removal of chemical waste from each individual sample funnel. Second, we added covers to the sample funnels to reduce the risk of external contamination. Cellulose purity (i.e., holocellulose) was confirmed by Fourier Transform Infrared (FTIR) Spectroscopy. Furthermore, accuracy of the radiocarbon analysis was confirmed by results of 14C-blank samples and samples of known age. In conclusion, while maintaining labor-saving, our modified device significantly reduces the risk of sample contamination during extraction of tree-ring cellulose.

Student Submission

Yes

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Session Classification: Sample Preparation Techniques

Track Classification: Sample Preparation Techniques