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## A method for preparing carbon 14 samples for AMS measurements without silver addition to remove sulfur

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Graphite target preparation is one of the key steps in accelerator mass spectrometry (AMS) radiocarbon chronology measurement, so it is crucial to make the graphitisation process simple and efficient. In traditional methods, desulphurisation of samples containing sulphur is essential, as sulphur can affect the yield of graphitisation, and usually requires the addition of silver to form Ag<sub>2</sub>S to remove the sulphur. However, this step increases the complexity and cost of the experiment. In contrast, the <sup>14</sup>C sampling system set up in the AMS laboratory at Guangxi Normal University simplifies the tedious step of sulphur removal during graphite preparation.

The sampling system allows CO<sub>2</sub> to be separated from other gases (H<sub>2</sub>O, NO<sub>2</sub>, SO<sub>2</sub>, etc.) by means of a double cooling trap without additional sulphur removal. It uses the different condensation points of the different gases to purify and collect the carbon dioxide gas, facilitating further graphitisation. The graphitisation of a large number of carbon samples has demonstrated the reliability of this sampling system. Measurements of the prepared graphite samples were carried out using the GXNU-AMS and the results showed that the silver-less combustion process not only reduces the cost of the experiment, but also reduces carbon contamination and provides accurate and reliable data for <sup>14</sup>C analysis.

### Student Submission

Yes

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