We are establishing a reliable measurement system for 14C extraction from quartz at the Lawrence Livermore National Laboratory. We present preliminary results of our experiment.

Application of in-situ produced 14C in the quartz will provide a better understanding of surface processes of the earth. Despite the widely recognized potential of this method, it has not been possible to measure the abundance of 14C contrasted with 10Be and 26Al from quartz, a widely utilized lithology for cosmogenic nuclides studies, although the University of Arizona's group has made significant progress recently. We are establishing a reliable measurement system for 14C extraction from quartz at the Lawrence Livermore National Laboratory. We present preliminary results of our experiment. The total background of 14C is typically about 2-3x10^5 atoms. Using a resistance furnace, which can be heated to ~1700 C, in-situ produced 14C can be extracted completely from each sample. Clean quartz were separated for 10Be and 26Al measurements. We are using these quartz samples taken from Homestake mine (1600 m below the surface) and Transantarctic Mountains to verify the extraction method, and will then obtain the production rate of 14C produced by direct spallation of oxygen in the quartz.

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