**Facilities, Equipment and Other Resources**

**The Pennsylvania State University**

**AMS Radiocarbon Laboratory**

The Radiocarbon Prep Laboratory at The Pennsylvania State University (PSU) includes both dry- and wet-lab areas for sample storage and preparation with standard laboratory equipment including a fume hood, Barnstead NanoPure water purifier, drying oven, freezer, freeze-dry lyophilizer, and balances. Samples for AMS radiocarbon dating are prepped, combusted to CO2 gas, and converted to graphite in the lab. Key equipment for radiocarbon sample prep includes a Hettich Rotofix centrifuge, Virtis lyophilizer, Barnstead programmable muffle furnace, a vacuum line for sealing radiocarbon samples prior to combustion, and a 12-port graphitization line for hydrogen-reduction of graphite on iron powder catalyst. The lines are made with Swagelok Ultra-Torr fittings on stainless steel drawn by oil-free Pfeiffer turbo pumps, and have been modeled on lines in use at KCCAMS at the University of California, Irvine. The lab has been swiped for the presence of 14C tracer and maintains constant quality controls on radiocarbon processing with KCCAMS through use of international and internal known-age lab standards (e.g., OX-1, OX2, Prophet River Wood, Beaufort Whale, FIRI secondaries). AMS 14C measurements will be made on PSU AMS Radiocarbon Laboratory which is part of the Energy and Environmental Sustainability Laboratories (EESL). The Radiocarbon Laboratory is equipped with a National Electronics Corporation compact spectrometer with a 0.5MV accelerator (NEC 1.5SDH-1) installed in April 2016. The primary modifications impacting analytical measurement error are the use of a spherical ionizer ion source operating at high cathode voltage (7V) to generate intense C- beams, plus injection beam line changes for better ion-optical matching to the accelerator. The injector modifications include a second einzel lens plus an increased ion source voltage running at 47.5 kV combined with a redesigned large-gap injector magnet (DF01319; Beverly et al. 2010). These alterations allow for analytical error in the 2-3‰ range for near modern samples under currents of up to 200 μA of 12C-and routinely generating 100-120 μA of 12C- from ~0.7mg C samples. Radiocarbon ages are δ13C-corrected for mass dependent fractionation with δ13C values measured on the AMS, and compared with OXII standards for normalization.