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Production of ^{13}N Using a 400keV Van de Graaff Positive Ion Accelerator[1] CHRISTOPHER PROKOP, JOHN CLYMER, NICHOLAS COMPTON, HENRY DAM, ADAM HANSON, JUSTEN PAUTZKE, ANDREW ROBERTS, Minnesota State University, Mankato — A target system has been developed to study the production and extraction of ^{13}N, a short-lived radioisotope of nitrogen ($t_{1/2}$ $\approx$ 9.6 minutes), formed via the ^{12}C(d,n)^{13}N reaction. The target is comprised of a graphite rod positioned in a custom-built target chamber where it is irradiated by a deuteron beam. Post irradiation, the target is flushed with H_2 or CO_2 gas, and heated via a large applied current producing $^{13}NH_3$ or HC^{13}N and $^{13}NO_2$ respectively. Radiolabeled ^{13}N compounds are used for physiological imaging using Positron Emission Tomography (PET). The production system used the 400keV Van de Graaff Positive Ion Accelerator housed in the Applied Nuclear Science Lab at Minnesota State University, Mankato. While this energy, slightly above threshold, is too low to make sufficient amounts of ^{13}N for imaging work, the system and procedure can be implemented on higher energy machines. Preliminary system results will be presented as well as accelerator calibration and reaction data.

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