

William Peters and Chase Boulware – Colloquium – January 16, 2020

Title: "Radioisotope Production from Radium and Uranium using a Superconducting Electron Linac"

Abstract:

Lansing-based Niowave, Inc. has been building superconducting accelerators and components in the 15 years since the company spun off from Michigan State University's National Superconducting Cyclotron Laboratory. Recently, the company has focused on operating its own electron accelerators to produce a variety of radioisotopes from uranium and radium targets. The company focus is medical radioisotopes, including Mo-99 for diagnostics and the alpha-emitter Ac-225 for cancer therapy. Both uranium and radium targets have been incorporated into closed-loop fuel cycles that allow the same target to be irradiated, chemically separated, and reconstituted, to be placed in front of the electron beam again. This talk will discuss Niowave's low-frequency superconducting electron linacs for high-power beams, isotope production pathways, and developments in industrial radiochemical separation techniques and hardware. Also to be covered are the emerging and potential collaborations related to radioisotope development for nuclear medicine, defense applications, and basic nuclear physics research. Career opportunities in this high-tech field will also be presented.