

Abstract Submitted
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A Novel Approach for Betavoltaic Devices Utilizing Nitrogen Doped Graphene Powder as an Electrode KYLE DRAKE, Stephen F. Austin State University — Betavoltaic devices were created based on the direct energy conversion method patented by Paul Rappaport in 1953. Betavoltaic devices are potential alternatives to current next generation batteries and fuel cells. A betavoltaic cell consists of a radioisotope that emits beta particles (electrons) and a semiconducting material. In the betavoltaic device the radioisotope emits a beta particle which passes through the semiconductor creating many electron-hole pairs (EHPs) causing a current to be produced. Current betavoltaic devices utilize high band gap semiconductors such as gallium arsenide, silicon carbide, and gallium phosphide. In this research, graphene will be used as a substitute for the semiconducting material used in current betavoltaic devices. Graphene is a new material which due to its remarkable electronic properties, is currently being investigated for possible applications in many fields. The purpose of this research is to incorporate graphene's properties as a semiconductor for use as an electrode in betavoltaic devices.

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