



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

Grant # 31310021M0046

Grantee: Worcester Polytechnic Institute

Title of Grant: Developing the Research Facilities, Shielding, and Licensing Strategy for a Next-Generation Hybrid Research and Power University Nuclear

Period of Performance: 9/27/2021-9/6/2024 (FY21 Notice of Funding Opportunity NOFO)

Executive Summary

The objectives of this proposal to use the MCNP6 Monte Carlo program to develop the research facilities for a next-generation hybrid university reactor (one that provides both research and power), to optimize these research facilities for neutron flux, to determine the shielding needed for their safe operation, to ensure that the facility design does not affect reactor baseline reactivity, and to develop a plan for licensing this hybrid reactor with the NRC. This facility will be developed for a Gen-IV eVinci™ MicroReactor with reactor design support provided by Westinghouse. Achieving these goals will expand the demand and utility of next-gen microreactors, expand the number of available high flux neutron research facilities, enhance research programs in a broad range of fields, dramatically decrease a university's carbon footprint, and educate nuclear students in next-generation technologies and techniques.

Principal Investigator: Dr. David Medich, dcmmedich@wpi.edu

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Presentations and Publications

The list of publications was submitted with the final report after grant expiration.

- "Evaluation of the eVinci Microreactor as a Hybrid Power and Research Facility for use in a University Campus" N. Hugger, D. Rosbach, D. Medich. was submitted to the Nuclear Technologies Journal on 12/18/2024. Submission ID: 248178888.
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Patents

N/A