Additive Manufacturing and its Implications for Nuclear Nonproliferation

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Abstract:

Additive manufacturing, also known as AM, is a rapidly developing technology that allows companies to streamline the production of intricate objects. It has recently been used in the field of nuclear weapons and enrichment technology, but there are currently few rules or regulations in place for its use in the nuclear industry. This lack of regulation could potentially lead to the uncontrolled proliferation of nuclear materials. To address this issue, it is necessary to examine and evaluate the various AM methods and their potential impact on the nuclear fuel cycle. This project aims to identify and rank 32 of the most used AM methods based on their potential to contribute to nuclear proliferation. By targeting specific AM techniques through export controls, it is possible to reduce the risk of nuclear proliferation without disrupting the entire industry. This comprehensive approach can also help to identify any gaps in current export regulations and assist in the creation of new legislation to monitor and control proliferation channels.