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Survey of Additive Manufacturing Signatures for the Prevention of Nuclear Proliferation

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Abstract:

Improvements in additive manufacturing technologies will enable multiple-material and advanced material capabilities, creating opportunities to improve the nuclear fuel fabrication process. Additive manufacturing can allow fuel to have complex geometries and contain composites of materials that would otherwise be difficult or impossible to make with traditional manufacturing methods. This opportunity also has implications for nuclear proliferation. We present a survey of additive manufacturing technologies and relevant signatures that could be used to identify processes, materials, or part properties.