

**Nuclear Isomers Investigation  
For On Demand High Energy Density Materials**

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ABSTRACT:

The objective of this investigation is to determine if it is possible and practical to obtain energy from certain nuclear isomers.

Excited states of nuclei can store five orders of magnitude more energy than that stored in chemical bonds. Essentially, the energy output would be nearly equivalent to nuclear fission, but without the radioactive effects. Potential applications include high energy weapons and extended duration power sources (i.e. "nuclear" batteries that could last as long as 100 years).

The experimentation involves learning how to trigger the isomeric spin states of the nuclei. Several candidate isomers with favorable characteristics will be tested via irradiation processes, including Lutetium and Silver. Should a triggering process be developed, two other associated issues are production of the isomeric materials and converting the energy to a usable form.

KEYWORDS: nuclear, isomers, trigger

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