

# Multi-functional Composite for Radiation Shielding

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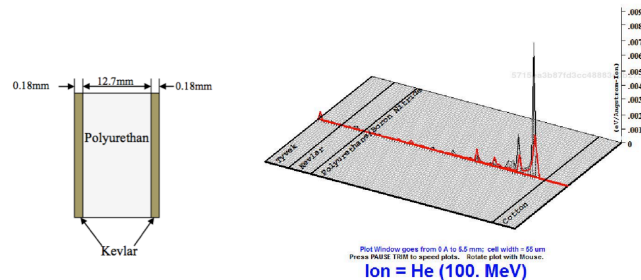
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## Problem

Currently there are no thin and active radiation shielding materials in widespread use. Only passive and bulky materials are available for radiation and magnetic protection. The market need is a durable lightweight material that could shield humans and other radiation sensitive objects while cost-effective.

## Innovation

A patented (#7947364) fluid filled multi-functional composite material (MFCM) has been created at New Mexico Tech in the late 2000's. The basic structure of the material is a skinned foam core composite. The polyurethane foam core was bio inspired with the cavities in the foam mimic the cavities in bone where marrow and blood pool. Simulation using SRIM software demonstrates following results.



	Hydrogen (MeV)	Helium (MeV)	Co 60 (GeV)	Cs 137 (GeV)
Lead	9	35	2	7
Tantalum	9	35	2	7
MFCM	28	110	6.5	20

Figures: (left) MFCM x-section; (middle) Phonon distribution of Helium @ 75MeV; (right) Comparison table.

## Economics

For every type of ion tested, the MFCM is able to stop significantly higher energy particles than that of lead and **tantalum** at the same weight. The trends suggest that this would be true of every particle and show that the MFCM has better shielding qualities compared to that of lead.

## Contact

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