

# In Brief: Nuclear explosion debris may reveal bomb's origin

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Nuclear explosion debris may contain microscopic evidence that could help investigators determine the origin of the bomb, according to a study published this week in the journal *Proceedings of the National Academy of Sciences*.

Albert J. Fahey and colleagues conducted a [forensic analysis](#) of Trinitite, the glassed ground debris formed by the United States Army's 1945 nuclear detonation at the "Trinity" test site in New Mexico.

The authors obtained a detailed profile of Trinitite's composition and molecular structure by using advanced [microanalysis](#) techniques such as [scanning electron microscopy](#), x-ray fluorescence, and secondary ion mass spectrometry to measure the concentrations of trace elements and isotopes.

After accounting for the fissile material and local natural rocks and minerals, the authors identified an isotopic signature of a known component from the Trinity device that the explosion had incorporated into the Trinitite sample.

The study demonstrates that investigators can microanalyze the debris of a nuclear detonation to reveal details about the specific materials used to construct the weapon, according to the authors.

These details, the authors suggest, could then help trace the weapon to its origin.

**More information:** "Postdetonation nuclear debris for attribution," by Albert J. Fahey, Cynthia J. Zeissler, Dale E. Newbury, Jeff Davis, and Richard M. Lindstrom, *Proceedings of the National Academy of Sciences*.

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