



## **The North Tower Eruption - September 11th 2001, 10:28:23-38 AM EDT - Lower Manhattan**

- 90,000 tons of concrete pulverized to fine powder
- 65 miles of steel columns chopped to short pieces
- a pyroclastic cloud of sub 100-micron particles
- 1000 megawatt hours of excess heat energy
- All in 15 seconds.

*To believe the official story requires that you believe that the steel frames of these buildings provided virtually no more resistance to falling rubble than did air*

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## Continuous Explosions Levelled the Towers

The towers' destruction cannot be accurately described without the word "explosion." Huge clouds billowed out from the towers, starting around the crash zones, and grew rapidly as they consumed each tower, converting them to fine powder and fragments of steel, and depositing the bulk of the remains outside of each tower's footprint in a radial pattern.

Incredibly, this stark reality has and continues to be so consistently and widely denied in government, media, industry, and academia, that few Americans have even entertained the idea that the towers were intentionally demolished. One of the key underpinnings of that denial is the fact that the explosions were continuous, extending for the entire 15-second duration of each tower's collapse.

Although witnesses describe loud pops at their onsets, the extended duration and loud roar of the explosions apparently prevented most people from thinking of them as explosions. Also, the repeated description of the events as collapses by the broadcast networks must have had a powerful effect in shaping people's understanding of them, particularly given the heightened state of suggestibility induced by the profound state of shock and disbelief most of them were in.



## Destruction of the Steel Remains

The only constituents of the Twin Towers that survived the "collapses" in the form of recognizable pieces of any size were their metal parts, such as pieces of structural steel and aluminum cladding. Virtually all the non-metallic parts of the towers and their contents were converted to microscopic dust particles or small unrecognizable fragments.

Building 7, though also reduced to a short pile of rubble, was not as thoroughly pulverized as the towers. Large sections of the building's perimeter wall could be seen on the rubble pile.

The surviving fragments of steel from the Twin Towers, most of them between 10 and 30 feet in length, and the larger remaining steel sections from Building 7, were essential to any serious investigation of the collapses. These catastrophic failures were at least as deserving of careful study as other rare events that are studied intensively, such as the aviation disasters investigated by the National Transportation Safety Board (NTSB). Normally, great care is taken in preserving the evidence from structural failures and crime scenes.

No such effort was made to preserve the evidence of the unprecedented and unexplained collapses of skyscrapers WTC 1, WTC 2, and Building 7 in lower Manhattan -- easily the three largest and least understood structural failures in history. Indeed the evidence was destroyed with remarkable speed and efficiency.



The scientific paper **Active Thermitic Material Discovered in Dust from the 9/11 World Trade Center Catastrophe** (*The Open Chemical Physics Journal*, 2009, 2, 7-31) provides, quite simply, proof that explosives were used in the destruction of the Twin Towers. Specifically, the paper positively identifies an advanced engineered pyrotechnic material in each of several samples of dust from the destroyed skyscrapers, in the form of tiny chips having red and gray sides and sharing a very specific three-dimensional structure, chemical composition, and ignition behavior.

The basis and validity of this identification can be grasped quickly by anyone with a working knowledge of physics and chemistry. They need only read the paper's one-page conclusion, and perhaps its section describing the provenance of the dust samples. But what of the reader whose strong suit isn't the hard sciences? Does one have to be an expert to understand the findings and evaluate the many claims thrown up by "debunkers" to dismiss those findings?

Fortunately, the answer is no. The central observations of the paper can be understood by any intelligent person with some effort. In this thumbnail summary of the paper's findings, I focus on three easy-to-remember features of the red-gray chips established by the paper -- features that undeniably show that the chips are a high-tech engineered pyrotechnic material.

The three features of the red-gray chips highlighted here -- physical structure, chemical composition, and thermal behavior -- clearly establish that they are **aluminothermic** nano-composite pyrotechnics: advanced manufactured materials that may only have been invented as recently as the mid-1990s. Any one of these three features taken alone shows that the chips contain an energetic material of some sort having no legitimate place in an office building. Any two of these features establishes that the material is an advanced pyrotechnic. That, combined with the material's abundance -- constituting perhaps 0.05 percent of the mass of the dust and therefore likely tens of tons within the buildings -- is clearly incompatible with prosaic sources, and fully consistent with the observations that the Towers were subjected to controlled demolitions.

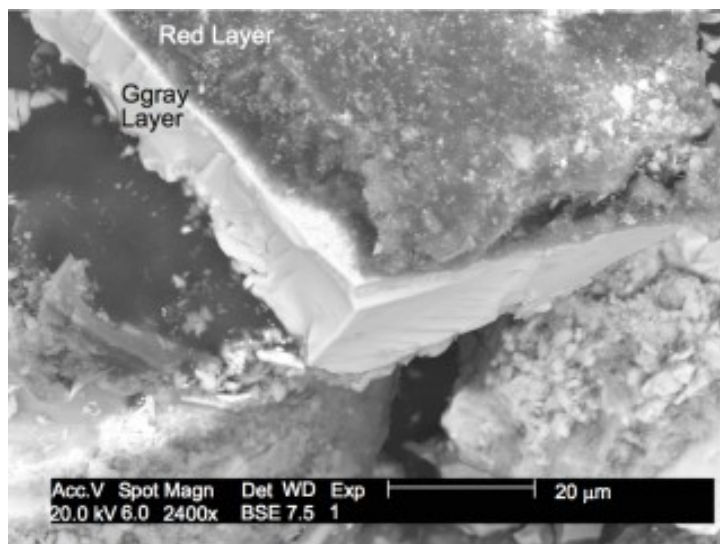
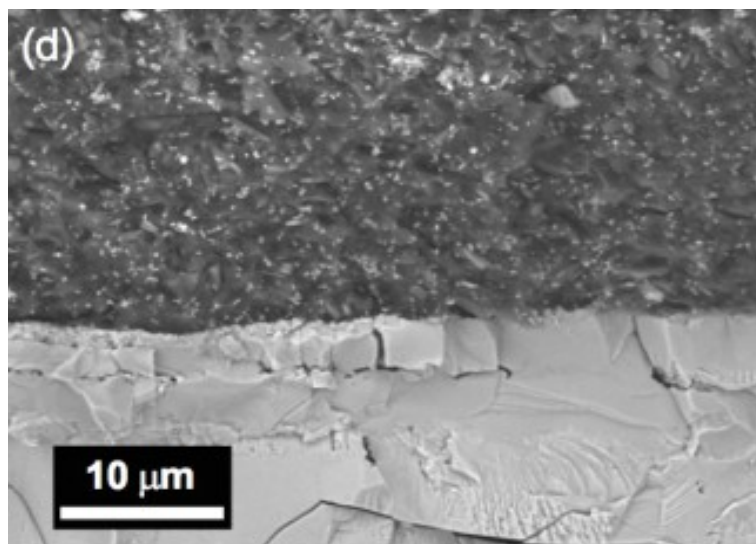


A portion of Fig. 2, showing one of the red-gray chips.  $\mu\text{m}$  means millionths of a meter. The length of the 100- $\mu\text{m}$  bar is therefore 1/10 of a millimeter -- about the width of a human hair.

## Physical Structure

- The chips, whose structure is consistent from one sample to the next, are clearly an un-natural, manufactured material.
- The red layer is a nano-engineered composite, containing two types of nano-particles, each highly consistent in size and shape.

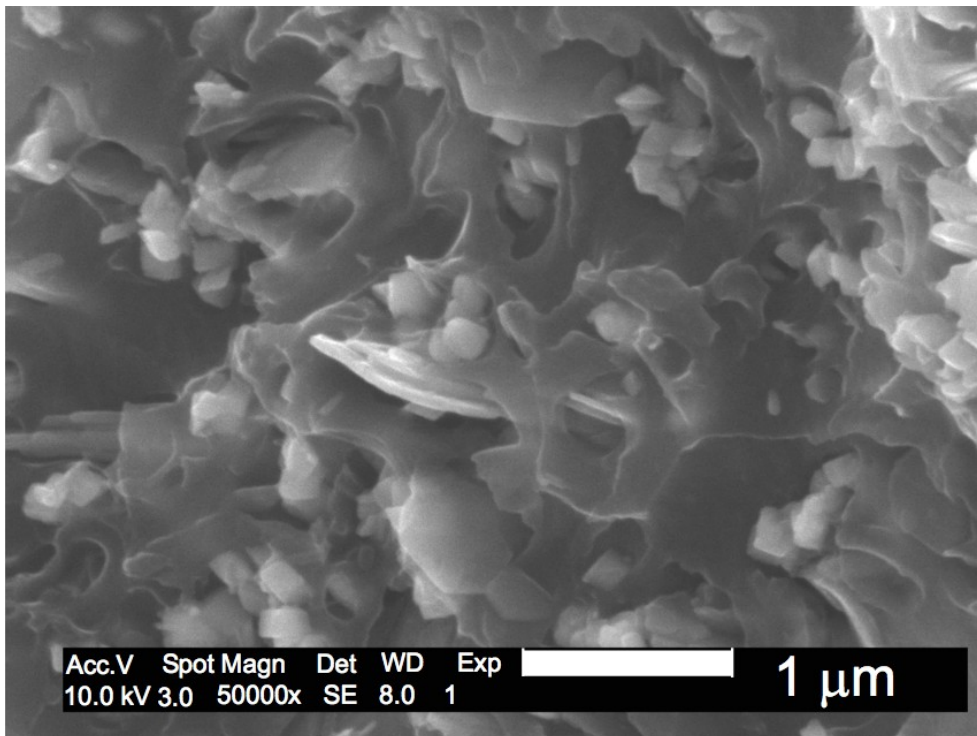
**Below:** Two scanning electron microscope images of bi-layered chips.



The physical structure of the chips is revealed by microscopic visual inspection, most clearly using a scanning electron microscope. A thin red layer is supported by a gray layer of homogenous material. Zooming in on the red layer shows it to be composed of two different types of particles embedded in a porous matrix: thin plates typically hexagonal in shape, and faceted grains.

### Three facts about the red layer are:

- The particles are very small: the plates being only about 40 nanometers thick, and the grains are only about 100 nanometers in diameter.
- The particles are highly uniform in size and shape.
- The particles are intimately mixed in a highly consistent composition throughout the material.



**above** showing a highly magnified view of the red layer. Note the often-hexagonal plate-like particles, and the smaller faceted particles, both lighter in color than the porous matrix.

- The red layers contain abundant aluminum, iron, and oxygen, where the iron is associated with oxygen, and the aluminum is mostly in a pure, elemental, form.
- The relative quantities of aluminum, iron, and oxygen match those of the most common **thermite** formulation:  $\text{Fe}_2\text{O}_3 + 2 \text{Al}$

The chemical composition of the chips is established by measuring the levels of elements in the chips' constituent parts. Using a scanning electron microscope equipped with X-ray energy-dispersive spectroscopy (XEDS), it is determined that each of the two types of particles in the red layer, as well as the porous material holding them, has a specific elemental composition.

This is the chemical equation of the most common type of thermite reaction:  $2 \text{Al} + \text{Fe}_2\text{O}_3 \rightarrow \text{Al}_2\text{O}_3 + 2 \text{Fe}$

Two atoms of aluminum react with a molecule of iron oxide to form a molecule of aluminum oxide and two atoms of iron. Because the aluminum holds the oxygen much more tightly than does the iron, the reaction releases a great deal of energy -- about three times as much per unit of weight as is released by conventional high explosives.

- The flat plates are mostly **aluminum**. Because the other elements are present in much smaller quantities, most of the aluminum must be in its elemental form, whose violent appetite for oxygen is passivated by a surface layer just a few molecules thick enveloping each particle.
- The faceted grains are mostly iron and oxygen in the ratio of the  $\text{Fe}_2\text{O}_3$  form of iron oxide, a compound that reacts with aluminum with intense heat to leave molten iron.

It is not even remotely possible that the material could have been formed spontaneously through any random process such as the total destruction of the Twin Towers. Nor is it possible that the material was present in the Towers for some innocent reason. The chips are clearly the unexploded remains of a pyrotechnic material -- likely a high explosive -- that was present in the Twin Towers in large quantities. Reasonable estimates of tonnage of material based on the abundance of red-gray chips in the dust range from the tens into the hundreds. Although the installation of so much material would require considerable planning and logistics, it would not necessarily be difficult to conceal, as this hypothetical blasting scenario shows.\*

The progressive detonation of so many tons of energetic material would explain the mushrooming explosions that so systematically shattered each Tower from top to bottom, and the incredible thoroughness of the destruction, which left virtually no recognizable building components other than the heavy steelwork and cladding, and no traceable fragment of more than 1000 human bodies.

The discovery of active thermitic materials adds to a vast body of evidence that the total destruction of the Towers were controlled demolitions, and to the subset of that evidence indicating the use of aluminothermic materials to implement those demolitions.

That discovery also undermines the oft-heard claim that no explosives residues were found, a claim that was never compelling, given the apparent lack of evidence that any official agency looked for evidence of explosive residues of any kind. Worse, the public record shows that NIST not only failed to look for such evidence, it repeatedly evaded requests by scientists and researchers to examine numerous facts indicating explosives and incendiaries .

I expect that collapse theory defenders will dismiss the discovery of active thermitic material in the same way that they dismissed the thermite residues: by claiming that the samples were contaminated and/or that there are other explanations for the origin of these artifacts than pyrotechnics in the WTC Towers. "Debunkers" have proposed that the iron-rich spheres were fly ash residues embedded in the Towers' concrete, ignoring that the iron constituents in fly ash are oxides rather than elemental iron. How will they explain away the bi-layered chips, whose red layers have iron oxide and elemental aluminum in the ratio of Fe<sub>2</sub>O<sub>3</sub> thermite as nano-sized particles of uniform shape?

As the work of explaining away the direct evidence of explosives becomes more daunting, we will probably see even more reliance on the mainstay of arguments against controlled demolition: those alleging that insurmountable obstacles would face such a project. Three of the most salient such workability arguments are:

- That the surreptitious preparation of the Twin Towers was too prone to exposure.
- That setting up the demolitions to start from the Towers' crash zones was technically unfeasible.
- That thermite is unsuitable as a tool of controlled demolition.

These arguments have taken on the appearance of straw men with their continued repetition -- including by NIST itself -- after being publicly shown to be based on false assumptions. The 9-11Research FAQ on Demolition addressed the first two starting in 2004, and Steven Jones and others addressed the third starting in 2006 by pointing out the existence of explosive variants of thermite.

#### **FAQ: Controlled Demolition With Aluminothermics**

With the publication of [Active Thermitic Material Discovered](#) it becomes even easier to imagine plausible scenarios that answer workability arguments. The characteristics of super-thermites and the features of the thermitic fragments described in the paper, combined with a survey of methods for the programmable wireless detonation of energetic materials available in 2001, provides straightforward answers to the most frequently-heard questions about the implementation of controlled demolition of the Twin Towers -- answers that thoroughly undermine assertions that controlled demolitions using aluminothermics was not feasible. Following are the three arguments listed above re-phrased as questions. I start with the last argument, which is addressed in detail in the discussion section of [Active Thermitic Material Discovered](#).

#### ***How Could Thermite, an Incendiary, Demolish the Towers, When Buildings Are Normally Demolished Using High-Explosive Cutter Charges?***

As is obvious from a review of the literature on energetic materials, thermite-based pyrotechnics can be engineered to have explosive power similar to conventional high-explosives while providing greater energy density and much greater stability. Thus, aluminothermic cutter charges similar to the shaped charges used in commercial demolitions are entirely feasible. However, a variety of forms of thermite might be used to demolish a steel-framed skyscraper in a way that uses no cutter charges at all, as in this Hypothetical Blasting Scenario, (see 911research.wtc.net website) which posits three types of aluminothermic pyrotechnics: a thermite incendiary coating sprayed onto steelwork, nano-thermite kicker charges placed near steelwork, and thin-film nano-composite high-explosives distributed throughout the building. The strategically applied incendiary coatings, ignited several minutes before the building's take-down, weaken the structure; but obvious failures start only when the kicker charges break key supports, and the thin-film high-explosives begin pulverizing the building from the initial failure zone outward

#### ***Why Weren't Demolition Charges Triggered by the Plane Crashes or the Subsequent Fires?***

Perhaps the plane crashes did trigger some of the charges. If so, their blasts were lost in the jet-crash fireballs, and their damage was insufficient to budge the Towers' tops. Thermite incendiaries in the core ignited by the crash would not be visible over the fires, unless dislodged to the building's exterior, as apparently happened in the South Tower. However, this probably wasn't an issue because, in contrast to conventional explosives, thermite has a very high ignition temperature -- above 2200°C. Thus, thermitic incendiaries used around the crash zones could have been designed to survive the fires. As for thermitic explosives, they could have been designed to detonate only on exposure to the very extreme conditions of temperature and pressure provided by specialized detonators, and to deflagrate (merely burn) in response to the kinds of pressures and temperatures produced by the plane crashes and fires. As a fail-safe, the demolition sequence could have been programmed to be triggered by premature ignitions of pyrotechnics.

#### ***How Could the Demolition Equipment Have Been Installed in the Twin Towers Without Tenants Noticing?***

The simple answer is by disguising the equipment as normal building components, so that not even the workers installing the components are aware of the concealed pyrotechnics. Three aspects of the Hypothetical Blasting Scenario that facilitate this are: the stability and specificity of ignition conditions achievable with aluminothermic pyrotechnics, minimization of the required access to steelwork, and the use of a completely wireless ignition control system.

**right:** WTC 1&2 were destroyed with such massive forces that both had most of their 110 concrete floor slabs and non-metallic objects pulverized.

Each created massive pyroclastic clouds that reached parts of New Jersey and Brooklyn and blanketed entire sections of lower Manhattan in inches of dust



**above:** molten metal typical of the thermite reaction pours from the South Tower in the moments before its destruction



**right:** tons of dust blankets lower Manhattan from river to river.

**right:** Evaporated steel flange from FEMA BPAT May 2002 - Appendix C 'A Limited Metallurgical Examination'

The results of the examination are striking. They reveal a phenomenon never before observed in building fires: eutectic reactions, which caused "intergranular melting capable of turning a solid steel girder into Swiss cheese." The New York Times described this as "perhaps the deepest mystery uncovered in the investigation." -Jim Hoffman

"A one-inch column has been reduced to Half-inch thickness. Its edges--which are curled like a paper scroll--have been thinned to almost razor sharpness. Gaping holes--some larger than a silver dollar--let light shine through a formerly solid steel flange. This Swiss cheese appearance shocked all of the fire-wise professors, who expected to see distortion and bending--but not holes." -WPI

