

# Molten What?

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There is much misunderstanding about the meaning of the colors we see when we look at pictures of the WTC towers before they fell. 9/11 literature is full of faulty assumptions, assertions, and conclusions. In this short paper I will present a case for how the pictures should be interpreted regarding the colors of thermal emissions we see in them. The case is based on the physics of black body radiation and gravity flow of liquids.

## Definitions

**Emissivity**—This is a dimensionless constant, the ratio of the energy radiated by a material to the energy radiated by a black body at the same temperature. This is the total energy across the emission spectrum. Emissivity is a number less than or equal to 1.

**Planck's Radiation Law**—See

[http://en.wikipedia.org/wiki/Planck's\\_law\\_of\\_black\\_body\\_radiation](http://en.wikipedia.org/wiki/Planck's_law_of_black_body_radiation). Planck's Law gives the spectral radiance of electromagnetic radiation of a black body. This is a function of frequency (or, equivalently, wavelength) and temperature. This law embodies the concept that the radiated spectrum as a function of frequency at a given temperature is the same shape for all radiating materials. The only factor affecting the radiated spectrum that depends on the nature of the material is emissivity, a constant, independent of frequency.<sup>1</sup>

## Discussion

It is very clear that the hydrocarbon fire from jet fuel could not have weakened the towers. All private and government researchers agree on this point. It is also very clear that the tower construction materials, together with the planes that crashed into them on 9/11, contained nothing that could have produced the incendiary reaction that was observed on the 82<sup>nd</sup> floor of WTC-2 shortly before the tower began its collapse.

What do we know about the incendiary event? From the video and still photos we see glowing metal that appears to be in the solid phase inside the opening. Its color is orange. We see a shower of white-hot sparks emanating from the opening. We see a yellow-orange liquid flowing from the opening. This material becomes more orange as it falls. As far as we can see it in its fall it seems to remain liquid. This material is clearly liquid that is flowing under gravity to the opening.

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<sup>1</sup> Recent discussion on the stj911 forum points out that emissivity is not really a constant, but the participants in the discussion agree that for purposes of estimating temperature from the radiated spectrum this assumption is probably good enough. See <http://www.phpbbserver.com/stj911/viewtopic.php?t=300&mforum=stj911>, post by Greg Jenkins, Apr. 29, 2007, 9:10 PM

There has been controversy over what this material is. It has been suggested that it is molten aluminum alloys from the plane. Some have suggested that it might be a mixture of aluminum alloys and organic material. Others have suggested that it is molten iron. Amazingly, in a televised Q&A session, a NIST official, John Gross, denied being aware of any molten iron in the rubble, and although NIST's investigation was limited to the time interval between the plane crash and the initiation of collapse Gross did not mention the event we are analyzing here.<sup>2</sup> Experiments have been conducted in the attempt to settle the issues. To date the parties do not agree on what the material is.

Planck's law and the nature of emissivity assure us that we can, with confidence, determine the approximate temperatures of all glowing hot objects in the pictures and videos without knowing what the objects are made of.

There is no need to repeat here the table of colors vs temperature that has been published elsewhere. All parties agree that it is accurate.

Dr. Wood has claimed that the liquid metal flowing out of the 82<sup>nd</sup> floor of WTC-2 could be aluminum on the basis of her experiment, wherein a titanium ladle full of pure aluminum was heated until both the ladle and the liquid aluminum were orange hot. The aluminum, as it heated up, appeared to radiate with a less intense energy than the titanium, but the color was the same. As expected, the aluminum melted at 660 degrees Centigrade, and at that temperature the radiant spectrum and the emissivity of aluminum conspired to make the liquid aluminum appear silvery (no apparent glowing). As the temperature of the aluminum rose it began to glow with the same color as the ladle.

The problem with concluding that the liquid flowing from the tower's 82<sup>nd</sup> floor could have been aluminum on the basis of Dr. Wood's experiment is that the liquid in the tower was not confined in a container so that more heat could be applied to raise the temperature of the liquid above its melting point. Instead, as soon as the metal liquefied it flowed away from the heat source under the force of gravity. Therefore, the color of the liquid flowing from the 82<sup>nd</sup> floor was at approximately the melting point of the metal. And therefore, it was molten iron from steel.

Dr. Jones demonstrated by experiment that organic material floats on the liquid aluminum and burns up (oxidizes). Further, the liquid aluminum in this experiment was never heated to the point where it no longer appeared silvery. This experiment gave the expected result. Organic material would not change the color vs temperature behavior of aluminum.

The conclusion of this analysis is inescapable. The liquid metal was molten iron.

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<sup>2</sup> <http://www.911eyewitness.com/truth/index.php?name=News&file=article&sid=89>