

# Secrets of the purple smoke discovered

Slide by Neil Goalby. Available from [rsc.li/47IE9ng](https://rsc.li/47IE9ng)

The world's first high explosive, called fulminating gold, produces a purple smoke when it detonates. Its name comes from the Latin for lightning. This alchemical explosive has been known for 400 years and is a complex mixture of gold compounds. The reason for the purple smoke was, however, remained unknown.

However, researchers have now discovered that the purple colour comes from spherical gold nanoparticles in the smoke, ranging in size from 30 nm to 300 nm. These metal nanoparticles interact with light to produce the purple colour.



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*Scientists have discovered what's hiding in the smoke ...*

## Questions

1. What is meant by nanoparticle?
2. Why do nanoparticles have different properties to larger particles?
3. Why does fulminating gold not have a chemical formula?