

CERN's Large Hadron Collider (LHC) has enabled scientists to fulfill the ancient dream of alchemists - transforming lead into gold! This breakthrough stands as one of modern physics' most remarkable achievements, accomplished by altering atomic structure.



**Transforming Lead into Gold** Scientists successfully created gold atoms by removing three protons from lead atoms. A lead nucleus contains 82 protons, while gold has 79. At LHC, lead atoms were accelerated to nearly the speed of light, and as they passed close to one another, powerful electromagnetic fields emerged. These fields altered atomic structures, causing protons to be ejected.

**How Long Did the Gold Last?** This alchemical transformation lasted less than a second. The gold atoms disintegrated immediately because they were unstable. Scientists analyzed this process through the ALICE (A Large Ion Collider Experiment) project.

**Significance of the Alchemical Breakthrough** This experiment not only realizes an ancient aspiration but also unlocks new possibilities in atomic physics and element

transmutation. Moreover, it may impact other scientific studies conducted at LHC.