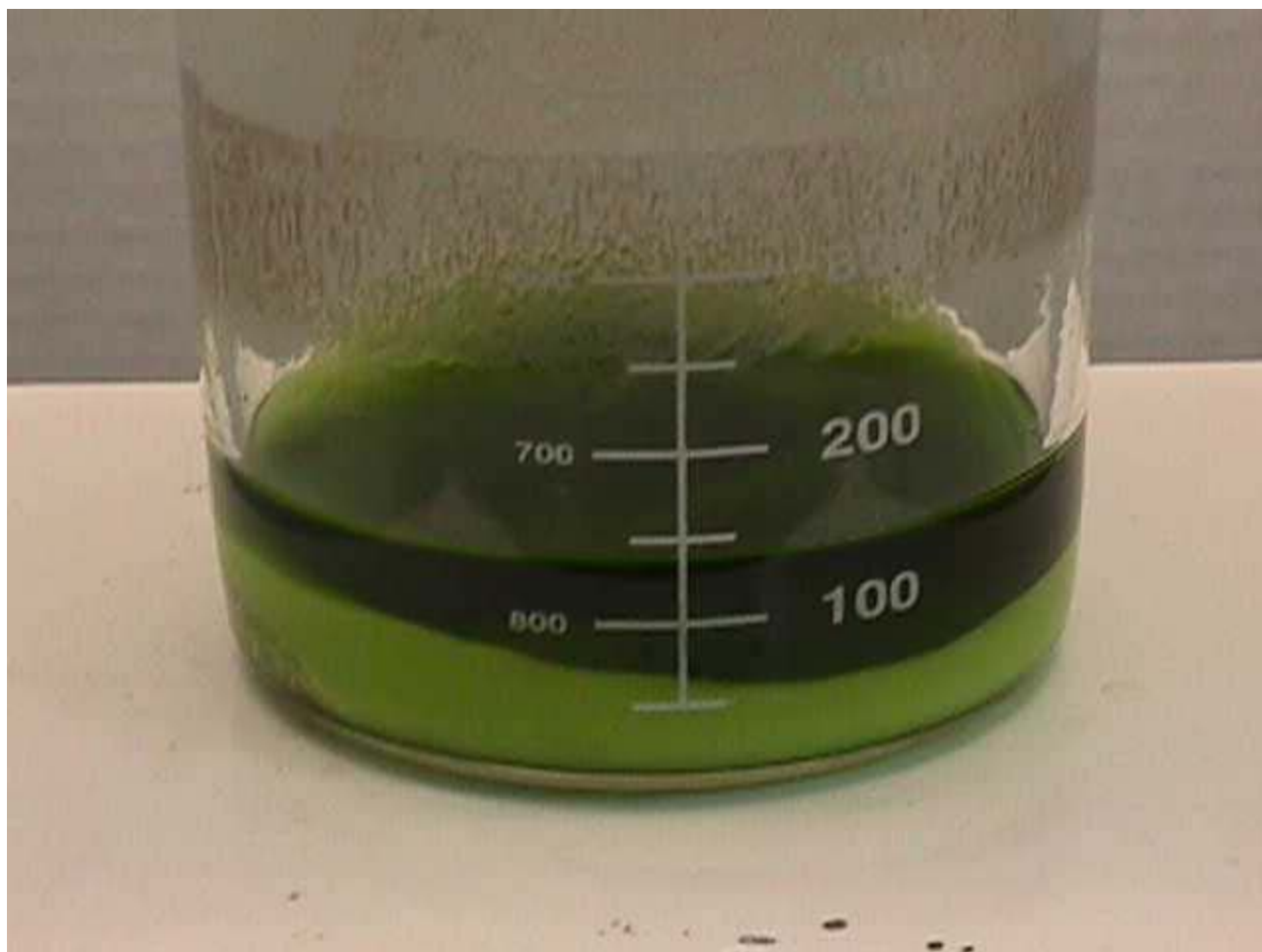


**Red Letter Ministries' monatomic elemental gold is prepared from metallic gold as follows:**

- (1) 50 mg gold (99.99% pure) were dispersed in 200 ml aqua regia to provide clusters of gold atoms.
- (2) 60 ml concentrated hydrochloric acid were added to the dispersion and the mixture was brought to boil, and continued boiling until the volume was reduced to approximately 10-15 ml. 60 ml concentrated HCl were added, and the sample brought to boil and checked for evolution of NOCl fumes. The process was repeated until no further fumes evolved, thus indicating that the nitric acid had been removed and the gold had been converted completely to the gold chloride.
- (3) The volume of the dispersion was reduced by careful heating until the salt was just dry. "Just dry" as used herein means that all of the liquid had been boiled off, but the solid residue had not been "baked" or scorched.
- (4) The just dry salts were again dispersed in aqua regia and steps (2) and (3) were repeated. This treatment provides gold chloride clusters of greater than 11 atoms.
- (5) 150 ml 6M hydrochloric acid were added to the just dry salts and boiled again to evaporate off the liquid to just dry salts. This step was repeated four times. This procedure leads to a greater degree of sub-division to provide smaller clusters of gold chloride. At the end of this procedure an orangish-red salt of gold chloride is obtained. The salt will analyze as substantially pure Au<sub>2</sub>Cl<sub>6</sub>.
- (6) Sodium chloride is added in an amount whereby the sodium is present at a ratio 20 moles sodium per mole of gold. The solution is then diluted with deionized water to a volume of 400 ml. The presence of the aqueous sodium chloride provides the salt Na<sub>2</sub>Au<sub>2</sub>Cl<sub>8</sub>. The presence of water is essential to break apart the diatoms of gold.
- (7) The aqueous sodium chloride solution is very gently boiled to a just dry salt, and thereafter the salts were taken up alternatively in 200 ml deionized water and 300 ml 6M hydrochloric acid until no further change in color is evidenced. The 6M hydrochloric acid is used in the last treatment.



(8) After the last treatment with 6M hydrochloric acid, and subsequent boildown, the just dry salt is diluted with 400 ml deionized water to provide a monoatomic gold salt solution of  $\text{NaAuCl}_2 \cdot x\text{H}_2\text{O}$ . The pH is approximately 1.0.

(9) The pH is adjusted very slowly with dilute sodium hydroxide solution, while constantly stirring, until the pH of the solution remains constant at 7.0 for a period of more than twelve hours. This adjustment may take several days. Care must be taken not to exceed pH 7.0 during the neutralization.

(10) After the pH is stabilized at pH 7.0, the solution is gently boiled down to 10 ml and 10 ml concentrated nitric acid is added to provide a sodium-gold nitrate. As is apparent, the nitrate is an oxidizer and removes the chloride. The product obtained should be white crystals. If a black or brown precipitate forms, this is an indication that there is still  $\text{Na}_2\text{Au}_2\text{Cl}_8$  present. If present, it is then necessary to restart the process at step (1).

(11) If white crystals are obtained, the solution is boiled to obtain just dry crystals. It is important not to overheat, i.e., bake.

(12) 5 ml concentrated nitric acid are added to the crystals and again boiled to where the solution goes to just dry. Again it is essential not to overheat or bake. Steps (11) and (12) provide a complete conversion of the product to a sodium-gold nitrate. No chlorides are present.

(13) 10 ml deionized water are added and again boiled to just dry salts. This step is repeated once. This step eliminates any excess nitric acid which may be present.

(14) Thereafter, the just dry material is diluted to 80 ml with deionized water. The solution will have a pH of approximately 1. This step causes the nitrate to dissociate to obtain NaAu in water with a small amount of HNO<sub>3</sub> remaining .

(15) The pH is adjusted very slowly with dilute sodium hydroxide to 7.0 + 0.2. This will eliminate all free acid, leaving only NaAu in water.

(16) The NaAu hydrolyzes with the water and dissociates to form HAu. The product will be a white precipitate in water. The Au atoms have water at the surface which creates a voluminous cotton-like product.

(17) The white precipitate is decanted off from any dark grey solids and filtered through a 0.45 micron cellulose nitrate filter paper. Any dark grey solids of sodium auride should be redissolved and again processed starting at step (1).

(18) The filtered white precipitate on the filter paper is vacuum dried at 120°C for two hours. The dry solid should be light grey in color which is HAu×XH<sub>2</sub>O and is easily removed from the filter paper.



(19) The monoatomic gold is placed in a porcelain ignition boat and annealed at 300°C under an inert gas to remove hydrogen and to form a very chemically and thermally stable white gold

monomer.

(20) After cooling, the ignited white gold can be cleaned of remaining traces of sodium by digesting with dilute nitric acid for approximately one hour.

(21) The insoluble white gold is filtered on 0.45 micron paper and vacuum dried at 120°C for two hours. The white powder product obtained from the filtration and drying is pure Monatomic Elemental Gold.

