



# ASSIST

AUSTRALIAN SCHOOL SCIENCE  
INFORMATION SUPPORT FOR  
TEACHERS AND TECHNICIANS

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## Making Gold Nanoparticles

Posted by Anonymous on Mon, 2014-08-04 10:20

Making Gold Nanoparticles: We have a teacher wanting to do the AccessNano/TechNYou "Making Gold Nanoparticles" experiment.

It calls for gold hydrogen tetrachloride (Chloroauric acid)  $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$ . I can't find it anywhere.

Any clues where to get it easily, how much it costs or if it is a mixture?

### Voting:



No votes yet

### Australian Curriculum:

People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities

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Physical Sciences

### Year Level:

9

10

Senior Secondary

### Laboratory Technicians:

Laboratory Technicians

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## **Answer by labsupport on question Answer by ginny.r.ward on question Making Gold Nanoparticles**

Submitted by ginny.r.ward on 17 August 2014

The compound  $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$  goes by the names chloroauric acid, hydrogen tetrachloroaurate or hydrogen tetrachloroaurate hydrate.

This compound is available from Sigma-Aldrich Co., <https://www.sigmaaldrich.com/australia.html> . The smallest package available is 250mg, product code 50790-250mg, which currently costs \$82.

The TechNYou Experiment *Making Gold Nanoparticles* requires 50mL of a  $2.5 \times 10^{-4}$  M solution of chloroauric acid, which means that only about 5 mg of this compound is needed per experiment. 250mg would therefore be sufficient for about 50 experiments (see the guide [Experiment-1\\_Making-Gold-Nanoparticles](#)).

In the past, small volumes of chloroauric acid in aqueous solution were available from Southern Biological who would obtain it via La Trobe University. However, we have learned that Southern Biological no longer stocks this product as a consequence of the low demand for it.

Chloroauric acid is corrosive and may cause sensitisation and should be handled with gloves in a running fume cupboard. The solid is also hygroscopic, which creates difficulties with storage and therefore should be stored in a desiccator in the presence of a drying agent such as granular silica gel. If it were possible, purchase of just enough of the solution would be much better than buying the solid.

We suggest that if you are not able to purchase chloroauric acid from Sigma Aldrich Co., that you get in touch with nearby schools or universities, who may have a supply of this, and see if they would be prepared to provide a small amount either as a solid or preferably in solution.

We strongly advise against preparing the compound yourself from gold leaf and aqua regia due to the difficulties in removing the unreacted acid, and the uncertainty in the purity of the product, not to mention the extreme hazards associated with using aqua regia.

Science ASSIST Editor's Note: The CSIRO's TechNYou site no longer exists. Science ASSIST and ASTA have been given permission to make some of their material available through their various sites. The experimental guide is available through the link above, and the video that accompanied the original TechNYou web page is available (with others) on the [ASTA Professional Learning site](#).

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