Gold *(Au)*

Figure 1: © Image by Sciffler from Pixabay.

1. What is Gold?

Gold is a chemical element from the group of so-called transition metals. It is a soft noble metal with an excellent ductility. Gold has only one stable isotope and belongs to the group of mononuclidic elements. Gold is not dissolved by conventional mineral acids. Only the oxidation potential of acids like aqua regia reacts with gold to form chloroauric acid.

In nature, gold occurs both as a pure metal and as a gold containing mineral (gold ore). processes. Gold is also extracted as a by-product of refining other metals. [1]

2. (Commercial) Use of the Material and its Applications

A large amount of the gained gold is manufactured into jewellery. In addition, gold is also used decoratively. For this purpose, gold leaf - very thinly rolled gold - is usually applied, which is then used to gild picture frames, sculptures, architectural elements, ceramics and much more. Furthermore, gold leaves are also used as a food additive. If a food product contains gold, it is marked with the identification number E175.

Gold is also used as a dental restorative and filling material in dentistry, although the demand here has declined for various reasons (e.g. aesthetics).

Nanoscale gold has also shown a wide range of applications in recent years. In addition to their industrial use as heterogeneous catalysts and inert carrier materials, gold nanoparticles are also becoming increasingly important in biochemistry and medicine, where they are used for tumor diagnosis and therapy or as trecers, for example.

Due to their unique physical and optical properties, which are achieved by the small size of colloidal gold, gold nanoparticles are also used for analytical measurement methods. A classic example is the surface plasmon resonance.

3. How can I come into contact with this material?

Whether in the form of jewellery or dental crowns, we can come into contact with gold almost every day. If material is removed from the surface by mechanical effects, the abrasion can also contain gold

nanoparticles. Since gold leaves are also added to food to refine it, as mentioned above, gold can also enter the body through oral uptake.

4. References

[1] https://www.nanopartikel.info/en/nanoinfo/materials/gold/overview