Method for determination of gold nanoparticles from biological matrix by microwave-assisted digestion and graphite furnace atomic absorption spectrometry (MW@GF-AAS).

Summary

Profile type	Company's country	POD reference
Technology offer	**Romania**	**TORO20240306007**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement** **Commercial agreement with technical assistance**	**• World**
Contact Person	**Term of validity**	**Last update**
Cristina-Maria BALGARADEAN	**9 Oct 2024** **9 Oct 2025**	**9 Oct 2024**

General Information

Short summary

A Romanian research institute has developed and validated a method for determination of gold nanoparticles from biological tissues with applications in biology and medicine. The Romanian research institute is looking for partners to implement and further develop the method through a research cooperation agreement or a commercial agreement with technical assistance.

Full description

Gold nanoparticles have a wide-ranging application and are widespread in samples with complex matrices; thus, efficient analytical procedures are necessary for their identification and characterization. While the amount of gold nanoparticles in different biological tissues is a significant consideration for their use in medical applications, no international standard method presenting the methodology for gold nanoparticle determination in biological tissues is available. Robust analytical methodologies are required in this field in a fully-validated process. At the same time, efficient analytical approaches are necessary to identify and characterize the gold nanoparticles in various and complex matrices for the quality control of products/ and risk assessment purposes.

The method developed and proposed by the Romanian research institute allows the determination of gold nanoparticles in biological tissues, through the the following steps:

- microwave-assisted acid wet digestion
- graphite furnace atomic absorption spectrometry (GFAAS)

The above mentioned steps are validated and conducted in accordance with the requirements of the Eurachem guideline and the ISO 17025 standard.

The method proposed by the Romanian research institute helps optimise quality control and risk assessment procedures for products/materials.

Aiming to transfer research results to the market, as well as further develop the method, the Romanian research institute seeks new international business partners interested in implementing the process in their activity to optimise processes or joining a research and development consortium to further develop the method. Partners sought include universities and research institutes in the areas of chemistry, medicine, pharmacy, history, pharmaceutical companies or research and development entities in this area, as well as laboratories focused on different chemical analyses.

Cooperation with potential partners will be based on research cooperation agreement or a commercial agreement with technical assistance.

Advantages and innovations

The method proposed presents the following innovative aspects:
- microwave-assisted extraction is a rapid and simple extraction method requiring short time (usually less than 30 min) and no concentrated acids/ high temperatures compared to conventional extraction methods;
- digestion method can be applied to other concentration testing techniques that require dissolving gold nanoparticles;

Implementing the method proposed by the Romanian research institute presents the following advantages:
- possibility to use low amounts of oxidizing acids;
- reduced processing costs;
- reduced energy and solvent consumption;
- increased recovery and rapid extraction rates.

Technical specification or expertise sought

Stage of development

Under development

Sustainable Development goals

• Goal 17: Partnerships to achieve the Goal

IPR Status

IPR applied but not yet granted

IPR Notes

IPR Notes

Partner Sought

Expected role of the partner

The Romanian research institute seeks new international business partners interested in long-term cooperation for the advancement or business implementation of the proposed method for determination of gold nanoparticles from biological matrix by microwave-assisted digestion and graphite furnace atomic absorption spectrometry (MW@GF-AAS). Cooperation will be based on research cooperation agreements or commercial agreements with technical assistance.

Partners sought include:

For research and cooperation agreements: universities and research institutes in the areas of chemistry, medicine, pharmacy, history interested in developing research projects and consortia aimed at advancing the method proposed and its applications.

For commercial agreement with technical assistance: universities, SMEs chemical laboratories interested in implementing the method in their research/business activity. Interested partners should hold appropriate equipment and qualified personnel. The Romanian research institute will support its partners with technical assistance.

Type of partnership

Research and development cooperation agreement

Commercial agreement with technical assistance

Type and size of the partner

- **University**
- **R&D Institution**

Dissemination

Technology keywords

- **06001012 - Medical Research**

Market keywords

- **05007007 - Other medical/health related (not elsewhere classified)**

Targeted countries

- **World**

Sector groups involved

- **Health**