# Method and kit for the microinvasive sampling of articles.

**Priority Number** 

# **KEYWORDS**

- □ MICRO-SAMPLING
- □ RIGID-GEL
- GELLAN
- □ MICRO-TRACES ANALYSIS
- □ FORENSIC ANALYSIS
- □ ANALYSIS FOR CULTURAL HERITAGE FIELD

# AREA

□ ARCHITECTURE **DESIGN &** CULTURAL HERITAGE

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## Patent Type Patent for invention.

**Ownership** Sapienza University of Rome 100%.

#### Inventors

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# Industrial & Commercial Reference

Raw material industries (gellan); industries producing kits in the field of Cultural Heritage (detection and maintenance); Industries involved in the area of Cultural Heritage and Forensic Investigations.

# Time to Market

The method and use of gellan matrix have been tested by the Italian Police Scientific Investigation Departments with particularly satisfactory results.

# Availability

Cession, Licensing, Research, Development, Experimentation and Collaboration.



# Abstract

The invention relates to a kit containing the necessary for carrying out a microsampling protocol with rigid gel portions (gellan) associated with analytical techniques such as surface-amplified Raman spectroscopy or mass spectrometry.

The kit contains components that allow multiple samplings to be performed quickly and easily, and keep the gel matrices containing the samples in an orderly and stable manner over time. allowing spectroscopic analysis even after a long period of time.

Sampling is quick, effective, and microinvasive and provides a protocol with the following phases:

- · Micro-sampling of the surface on which the substance to be analyzed is present with an amount of the rigid gel matrix, possibly in the presence of an organic solvent:
- Drving in a sample holder:
- Spectroscopic analysis of the microsample(s) obtained.

# Publications

Livia Lombardi, Ilaria Serafini, Marcella Guiso, Fabio Sciubba, Armandodoriano Bianco. A new approach to the mild extraction of madder dyes from lake and textile - Microchemical Journal, Volume 126, May 2016, Pages 373-380.



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# Method and kit for the microinvasive sampling of articles.

# **Technical Description**

The method and kit for micro-invasive sampling of the invention are applied in all fields where micro-sampling of trace substances is required.

In particular, substances are organic substances such as colorants, traces of biological materials, explosives, narcotic substances, whose detection can be carried out by analytical techniques suitable for tracing substances.

The uses of the method and kit are in the fields of Diagnostics for Cultural Heritage, in which it is essential to noninvasively sample the article, and the forensic one, in which it is also extremely important to be able to analyze traces of organic or biological substances in a repeatable way, in order not to destroy the article and above all not to alter the scene of the crime.

# **Technologies & Advantages**

The kit of the invention contains the necessary for carrying out a microsampling protocol (with a rigid gel matrix) that allows multiple sampling to be carried out in a simple and rapid manner and to preserve the gel matrices containing the samples in an ordered and stable manner over time, allowing spectroscopic analysis even after a long period of time from sampling.

The kit and the use of a rigid gel such as gellan for micro-sampling in the forensic and cultural heritage fields allow to perform a plurality of noninvasive micro-samplings that leave no traces of the material used for sampling and allow the spectroscopic analysis of the sampled material even after long periods of time; the kit as claimed allows in fact such sampling in a simple and quick manner and allows to preserve the gel matrices containing the samples in an ordered and stable manner over time.

# Applications

Microinvasive analysis of articles in the field of cultural goods and forensics.

The is particularly suitable gel matrix for this type of analysis is gellan.

The kit of the invention allows sampling within seconds without altering the article on which the sampling is performed. Just think to the high number of possible samplings in a single inspection that at the same time guarantees excellent specimen storage.

The kit has excellent sterility properties as rigid gel blisters are stored in an inert atmosphere and possibly in monodose packs. Additionally, by providing all ready-to-use materials reduces the number of manual operations with the dual effect of speeding up the picking operations and reducing the risk of contamination.

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