

# Partnering Opportunity

Profile status : Archived

## Technology Offer

### Optimized extraction of PLFA (Phospholipid Fatty Acid) from soil for gas-chromatographic analysis

#### Summary

*Specialized in the research and development of analytical methodologies for a wide range of samples, a research institute from Romania has developed a method for fast and simple extraction of PLFA (Phospholipid Fatty Acid) from soil for gas-chromatographic analysis on the structure and abundance of soil microbial diversity. The researchers are interested in co-operation with SMEs, R&D centers, universities etc. based on services or research cooperation agreements.*

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#### Details

##### Description

A Romanian research institute from Transylvania is specialized in the research and development of analytical methodologies for a wide range of samples. Owning the latest generation research equipment, the Romanian research institute is able to perform various chemical analyses.

Within the Romanian research institute, a group of researchers has developed a method for the extraction of PLFA (Phospholipid Fatty Acid Analysis) from soil for gas-chromatographic analysis on the structure and abundance of soil microbial diversity. Their research work relates to the optimization of the method for extracting the profile of fatty acids derived from phospholipids, having as an ultimate goal to facilitate the gas-chromatographic determination of

the structure and abundance of the microbial community in the soil at the ultra-trace level in a fast and simple way. The proposed extraction method refers to 37 fatty acids derived from the phospholipids cell membranes of the microorganisms present in the soil. The chromatographic analysis of the phospholipid-derived fatty acid profile allows obtaining real-time information (from the time of sampling) on the structure of the existing microbial community in soil (microorganisms classes).

The purpose of the present invention is to overcome the identified technical problems, such as the extended duration of sample preparation and, respectively, the predisposition to introduce a series of errors in the final result. Thus, based on the workflow developed and proposed by the Romanian researchers, the method of extracting PLFA from soil for gas-chromatographic analysis on the structure and abundance of soil microbial diversity has an about 3 hours length as compared to 7 days according to the existing international protocol.

The research carried out by the Romanian team led to an entire analysis process reduced to 4 major stages:

- (1) saponification;
- (2) separation of the phospholipid fraction from the glycolipid fractions and neutral lipids;
- (3) derivatization reaction (methylation);
- (4) obtaining a purer (less interfering) extract for chromatographic gas analysis.

Owning the necessary infrastructure and the already developed method, the Romanian research institute is offering its professional services related to the proposed method to foreign partners looking for a reliable service provider experienced in obtaining fast results for the extraction of PLFA from soil for gas-chromatographic analysis.

Willing to extend their area of research by improving the present extraction of PLFA from soil for gas-chromatographic analysis, the Romanian group of researchers is open to co-operate with international partners (SMEs, R&D centers, universities etc.) with relevant experience in the same field of activity, for the further development of the method (new directions of research) on the basis of a research cooperation agreements.

## Advantages and innovations

The optimized extraction method of PLFA from soil has the following main advantages:

1. it offers the possibility to reduce the sources of error by means of \*decreasing the time and the steps necessary to achieve the extraction, \* eliminating the stage of cultivation and isolation of the microorganisms community on Petri plates, \*reducing the potential for alteration of the samples (e.g. loss in the structure or abundance of the microorganism community in the samples) having the possibility of carrying out the extraction at the moment the sample arrived in the laboratory;
2. it offers the possibility to reduce the extraction time by eliminating the stage of cultivation and isolation of the microorganisms community on Petri plates and, respectively, by eliminating the time required for incubation and separation of the organic phase;
3. it offers the possibility to increase the selectivity and specificity of the analysis via the elimination of the cultivation and isolation stage of the microorganisms community on Petri plates and direct analysis of the soil extraction, which allows both concurrent analysis of all potential classes of microorganisms in soil and at low abundances (trace and ultra-trace analysis of fatty acids derived from phospholipids).

## Stage of development

Available for demonstration

### IPR Status

Patent(s) applied for but not yet granted

### Comment Regarding IPR status

The application to the Romanian State Office for Inventions and Trademarks is pending.

### Profile Origin

National or Regional R&D programme

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### Keywords

#### Technology

05001001 Analytical Chemistry

#### Market

08004004 Other pollution and recycling related

09005 Agriculture, Forestry, Fishing, Animal Husbandry & Related Products

#### NACE

M.72.1.9 Other research and experimental development on natural sciences and engin

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### Network Contact

#### Issuing Partner

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**Open for EOI:** **No**

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## Dissemination

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### Relevant sector groups

Agrofood  
Bio Chem Tech  
Environment

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## Client

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### Type and Size of Organisation Behind the Profile

R&D Institution

### Year Established

1992

### Already Engaged in Trans-National Cooperation

Yes

### Languages Spoken

English

### Client Country

Romania

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## Partner Sought

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### **Type and Role of Partner Sought**

For the further development of the present extraction of PLFA from soil for gas-chromatographic analysis, the Romanian group of researchers is open to co-operate with international SMEs, R&D centres, universities etc. that have new ideas in the field and are interested in research cooperation agreements. As the Romanian research institute owns top of the research endowment, the partner sought should be characterized by creative thinking, relevant experience in Agrofood, Environment, Bio Chem Tech etc. and interest in working together with the Romanian team.

In terms of services agreement, the partner sought could be among R&D centers/ institutes, universities and/ or SMEs active in the field of Agrofood, Environment, Bio Chem Tech etc. that are interested in performing the extraction of PLFA (Phospholipid Fatty Acid Analysis) from soil for gas-chromatographic analysis, but do not have the necessary infrastructure, the method developed and/ or the time required for analyses.

### **Type and Size of Partner Sought**

SME 11-50, University, R&D Institution, SME <10, SME 51-250

### **Type of Partnership Considered**

Services agreement  
Research cooperation agreement

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### **Attachments**

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