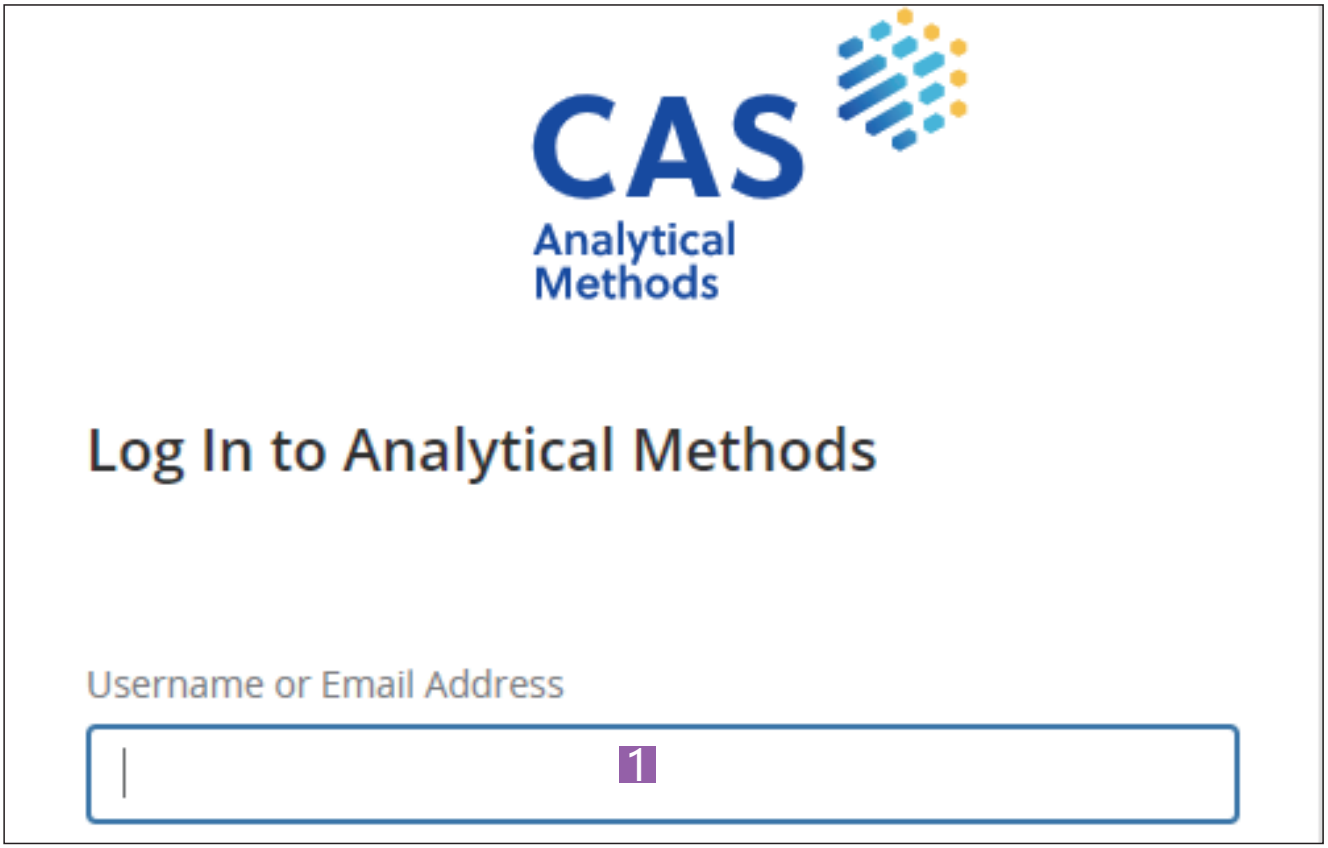
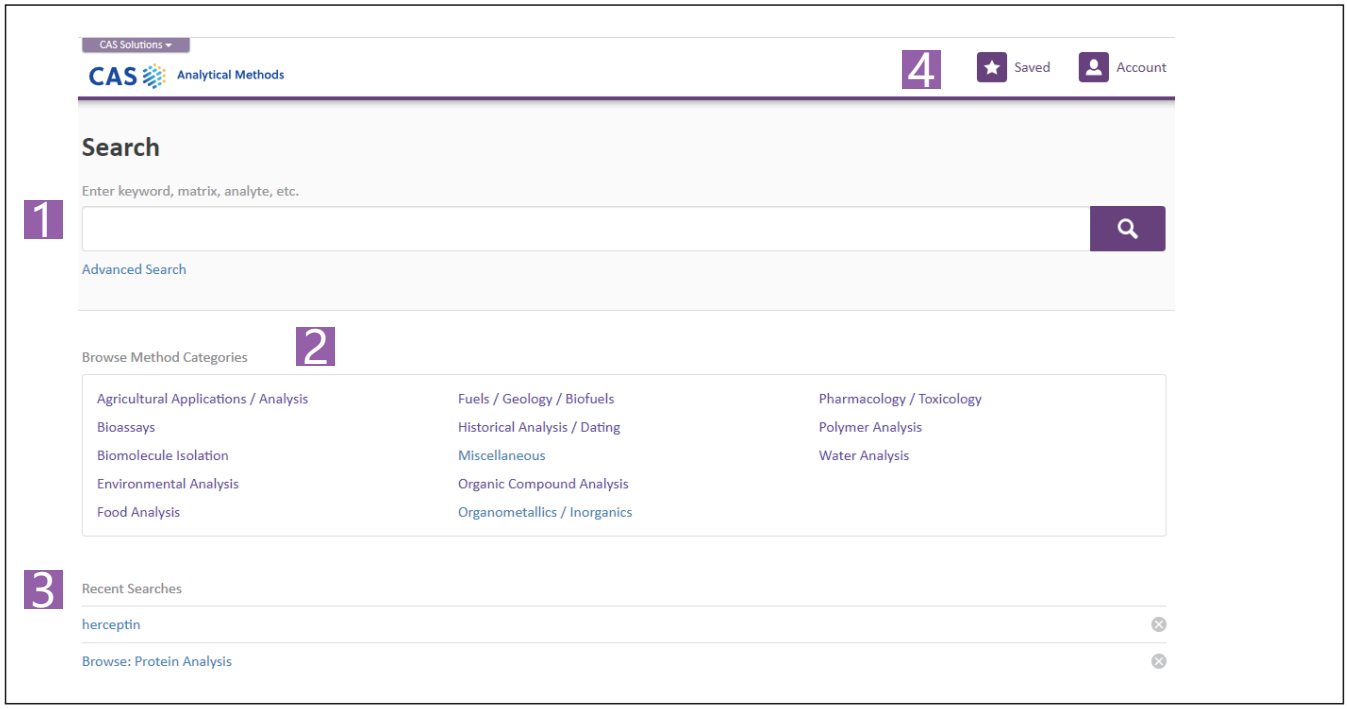
CAS Analytical Methods快速获取详细的分析方法

CAS Analytical Methods (methods.cas.org)

- Organic Compound Analysis: 天然产物分离分析，手性分离，活性药物成分及代谢产物分析...
- Organometallics / Inorganics: 地质分析，无机物分析，金属有机化合物分析
- Pharmacology / Toxicology: 成瘾药物检测，有毒物检测...
- Bioassays: 生物探针，生物标定细胞实验，生物标定药物实验，生物医学材料分析，生物分子/生物组织分离测定...
- Water Analysis: 阴阳离子分析，元素测定，痕量元素分析，废水分析，生物标记公共卫生分析...
- Historical Analysis / Dating: 考古分析，同位素分析
- Environmental Analysis: 土壤/空气/水分析，农药残留分析...
- Agricultural Applications / Analysis: 除草剂分析...
- Food Analysis: 脂肪酸分析，脂肪酸酯分析，蛋白质分析...
- Fuels / Geology / Biofuels: 生物燃料分析，油气分析，石油产品分析，煤炭加工...
- Miscellaneous: 化妆品分析，爆炸物分析，纳米材料分析...



1 登录methods.cas.org网址，输入用户名和密码

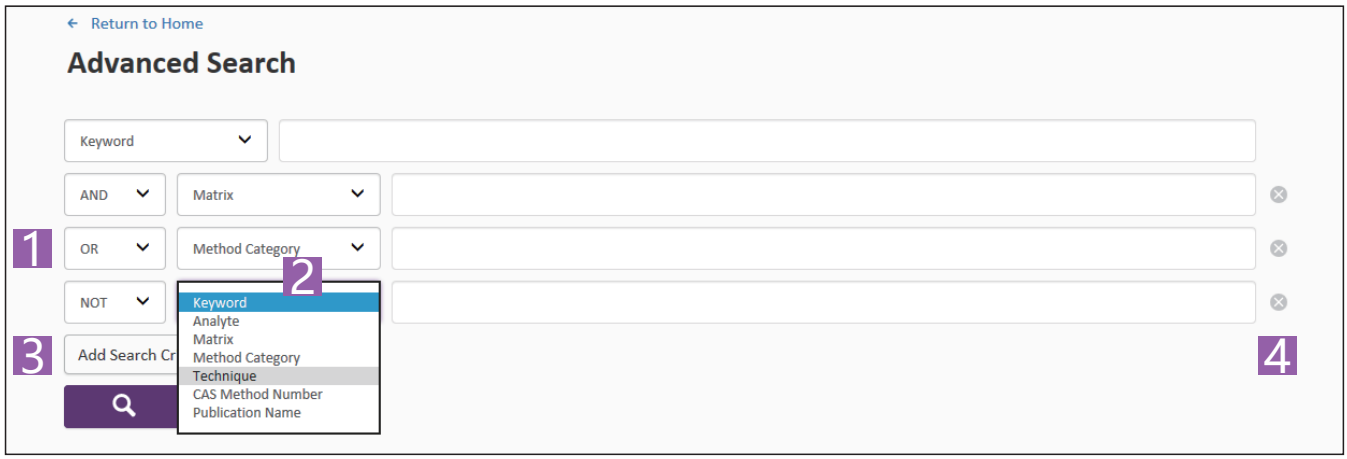


1 可以在检索框输入关键词或者分析物等进行检索

2 也可以通过浏览方法分类，点击一个浏览类别查看相关方法

3 点击历史检索重新运行检索，点击X删除检索历史

4 保存结果集



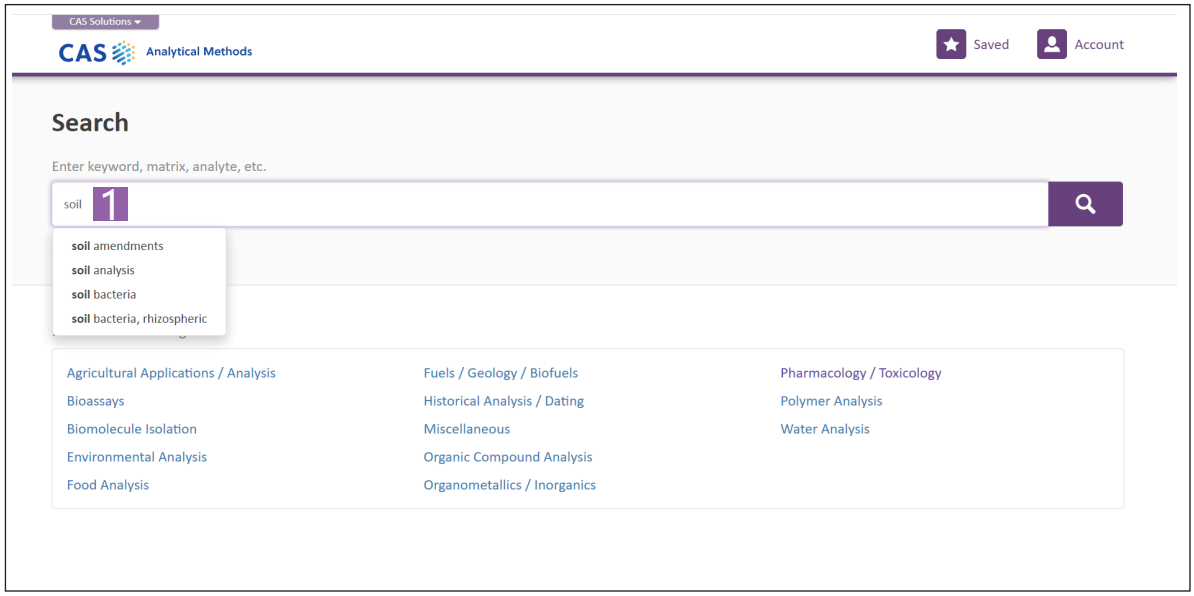
1 逻辑运算符：and, or, not

2 检索条件包括：关键词，分析物， 基质，方法分类，技术手段，CAS方法号，出版物名称

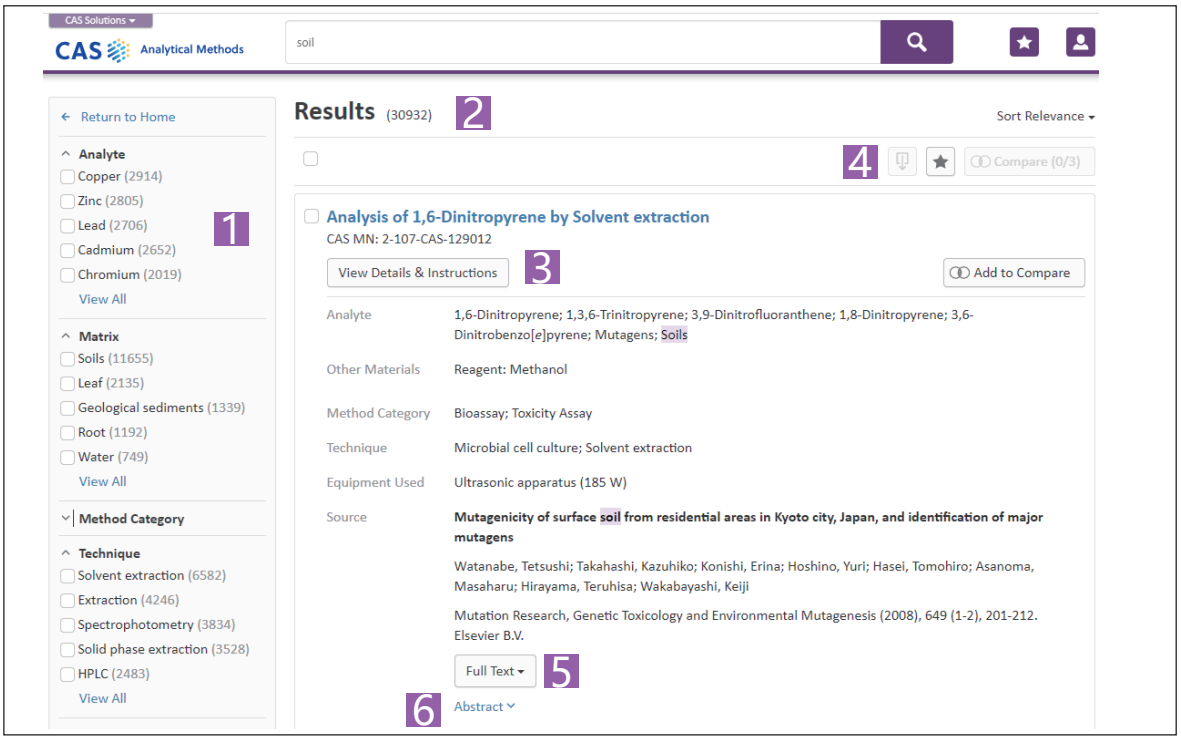
3 增加检索条件

4 删除检索条件

案例：在土壤中检测重金属的方法



1 此处只需要输入物质的一个名称即可，CAS Analytical Methods会自动进行同义词的查找



1 按照分析物、基质、方法分类、技术手段、公开年份等条件筛选结果

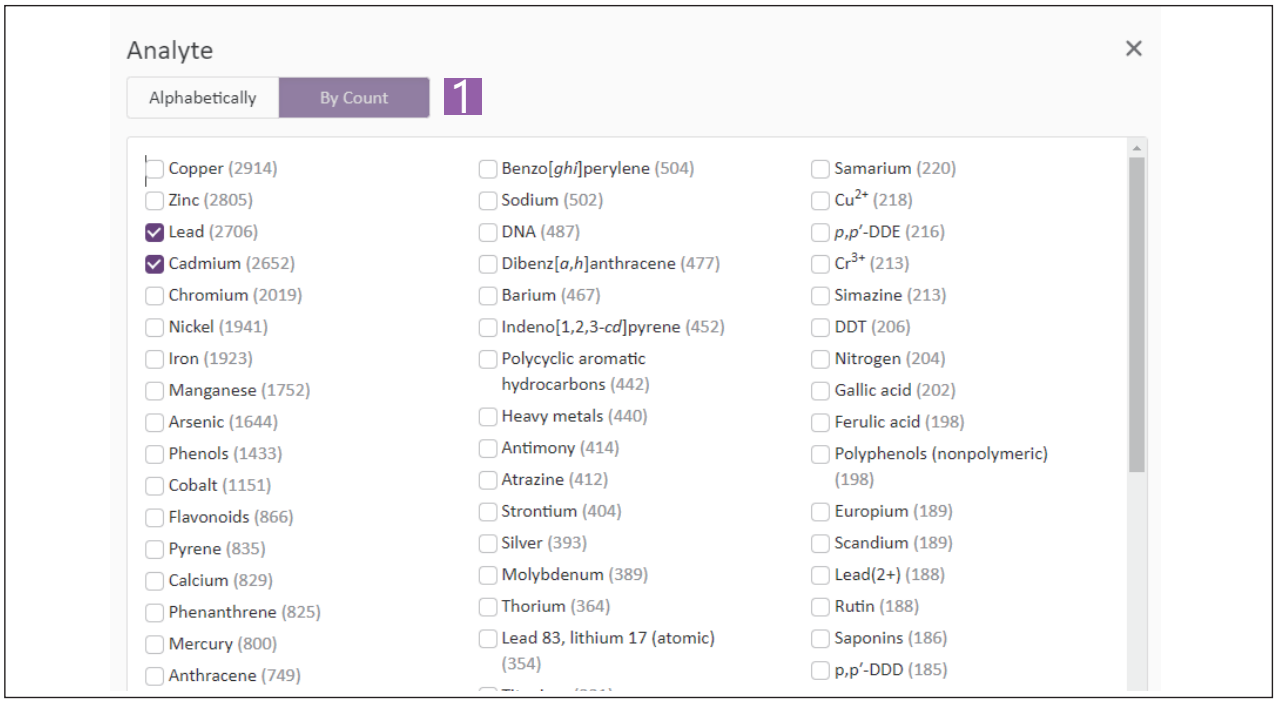
2 方法结果数量

3 查看方法信息详情

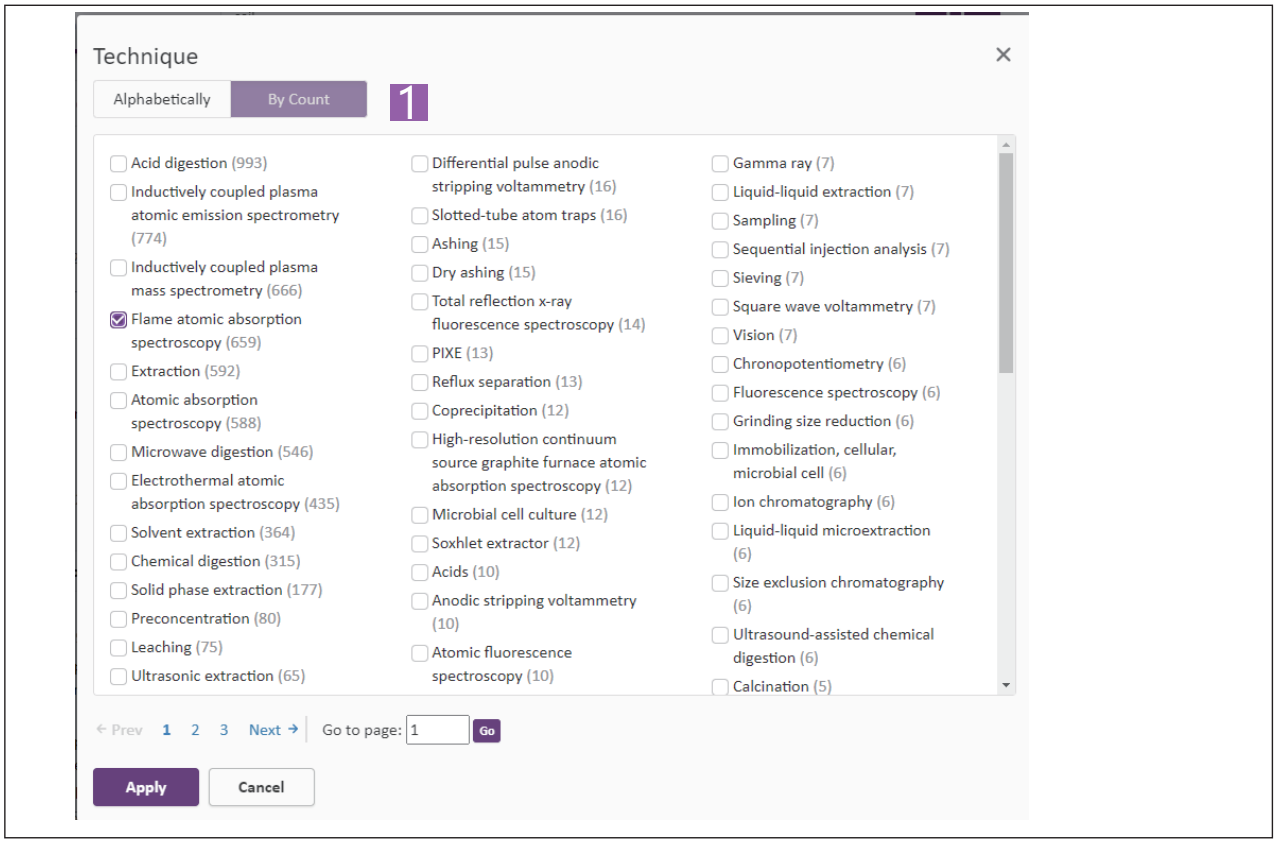
4 导出或者保存方法

5 获得全文链接

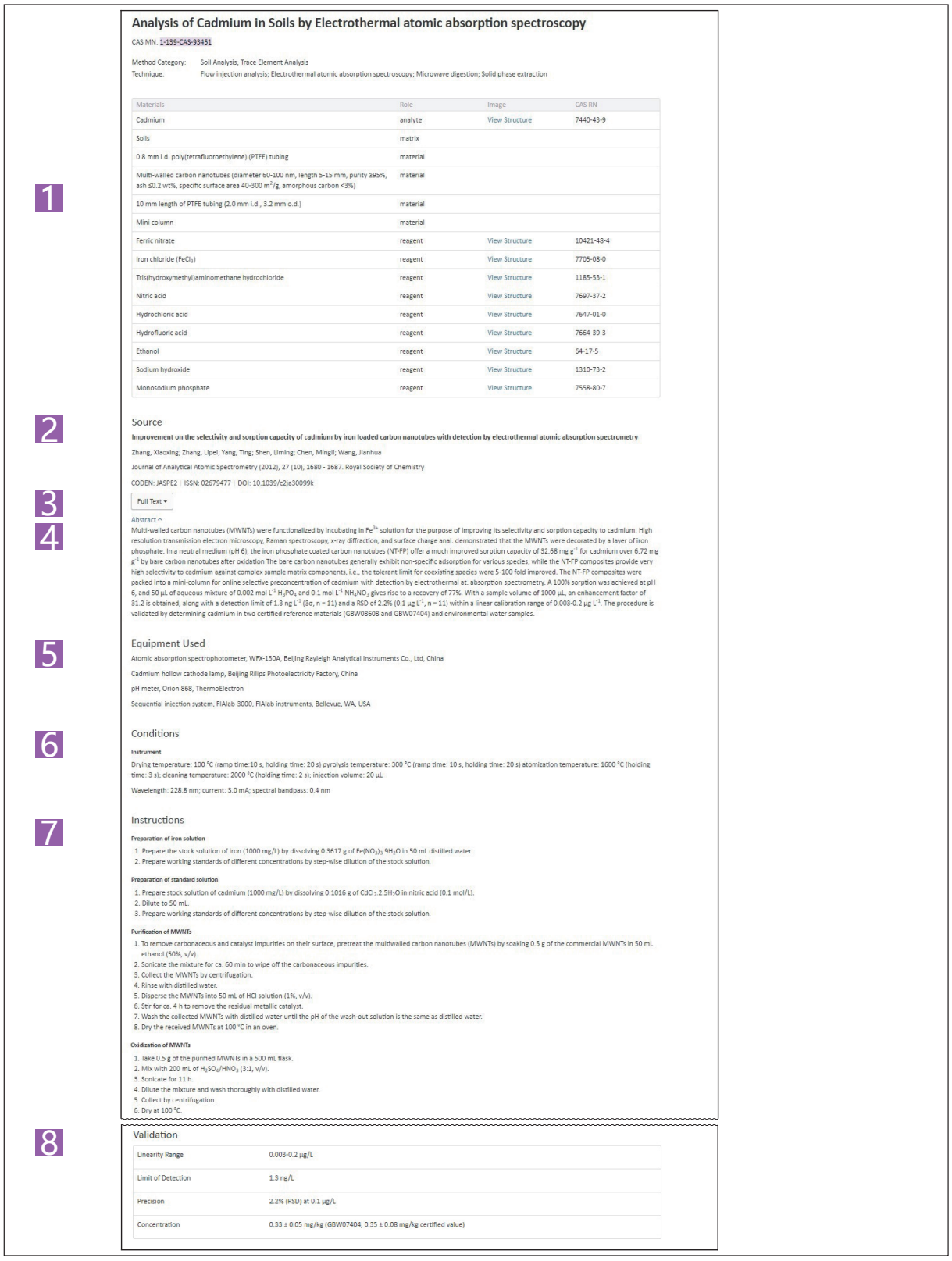
6 展示摘要



1 点击分析物列表，选择目标分析物



1 点击技术手段列表，选择技术手段



Analysis of Cadmium in Soils by Electrothermal atomic absorption spectroscopy

CAS MN: 1-139-CAS-93451

Method Category: Soil Analysis; Trace Element Analysis
Technique: Flow injection analysis; Electrothermal atomic absorption spectroscopy; Microwave digestion; Solid phase extraction

Materials	Role	Image	CAS RN
Cadmium	analyte	View Structure	7440-43-9
Soils	matrix		
0.8 mm i.d. poly(tetrafluoroethylene) (PTFE) tubing	material		
Multi-walled carbon nanotubes (diameter 60-100 nm, length 5-15 mm, purity ≥95%, ash ≤0.2 wt%, specific surface area 40-300 m^2/g, amorphous carbon <3%)	material		
10 mm length of PTFE tubing (2.0 mm i.d., 3.2 mm o.d.)	material		
Mini column	material		
Ferric nitrate	reagent	View Structure	10421-48-4
Iron chloride ($FeCl_3$)	reagent	View Structure	7705-08-0
Tris(hydroxymethyl)aminomethane hydrochloride	reagent	View Structure	1185-53-1
Nitric acid	reagent	View Structure	7697-37-2
Hydrochloric acid	reagent	View Structure	7647-01-0
Hydrofluoric acid	reagent	View Structure	7664-39-3
Ethanol	reagent	View Structure	64-17-5
Sodium hydroxide	reagent	View Structure	1310-73-2
Monosodium phosphate	reagent	View Structure	7558-80-7

Source

Improvement on the selectivity and sorption capacity of cadmium by iron loaded carbon nanotubes with detection by electrothermal atomic absorption spectrometry

Zhang, Xiaoxing; Zhang, Lipei; Yang, Ting; Shen, Liming; Chen, Mingli; Wang, Jianhua

Journal of Analytical Atomic Spectrometry (2012), 27 (10), 1680 - 1687. Royal Society of Chemistry

CODEN: JASPE2 | ISSN: 02679477 | DOI: 10.1039/c2ja30099k

Full Text

Abstract

Multi-walled carbon nanotubes (MWNTs) were functionalized by incubating in Fe^{3+} solution for the purpose of improving its selectivity and sorption capacity to cadmium. High resolution transmission electron microscopy, Raman spectroscopy, x-ray diffraction, and surface charge anal. demonstrated that the MWNTs were decorated by a layer of iron phosphate. In a neutral medium (pH 6), the iron phosphate coated carbon nanotubes (NT-FP) offer a much improved sorption capacity of 32.68 mg g^{-1} for cadmium over 6.72 mg g^{-1} by bare carbon nanotubes after oxidation The bare carbon nanotubes generally exhibit non-specific adsorption for various species, while the NT-FP composites provide very high selectivity to cadmium against complex sample matrix components, i.e., the tolerant limit for coexisting species were 5-100 fold improved. The NT-FP composites were packed into a mini-column for online selective preconcentration of cadmium with detection by electrothermal at. absorption spectrometry. A 100% sorption was achieved at pH 6, and 50 μL of aqueous mixture of 0.002 mol L^{-1} H_3PO_4 and 0.1 mol L^{-1} NH_4NO_3 gives rise to a recovery of 77%. With a sample volume of 1000 μL, an enhancement factor of 31.2 is obtained, along with a detection limit of 1.3 ng L^{-1} (3σ, n = 11) and a RSD of 2.2% (0.1 μg L^{-1}, n = 11) within a linear calibration range of 0.003-0.2 μg L^{-1}. The procedure is validated by determining cadmium in two certified reference materials (GBW08608 and GBW07404) and environmental water samples.

Equipment Used

Atomic absorption spectrophotometer, WFX-130A, Beijing Rayleigh Analytical Instruments Co., Ltd, China

Cadmium hollow cathode lamp, Beijing Rilips Photoelectricity Factory, China

pH meter, Orion 868, ThermoElectron

Sequential injection system, FIAlab-3000, FIAlab instruments, Bellevue, WA, USA

Conditions

Instrument

Drying temperature: 100 °C (ramp time:10 s; holding time: 20 s) pyrolysis temperature: 300 °C (ramp time: 10 s; holding time: 20 s) atomization temperature: 1600 °C (holding time: 3 s); cleaning temperature: 2000 °C (holding time: 2 s); injection volume: 20 μL

Wavelength: 228.8 nm; current: 3.0 mA; spectral bandpass: 0.4 nm

Instructions

Preparation of iron solution

1. Prepare the stock solution of iron (1000 mg/L) by dissolving 0.3617 g of $Fe(NO_3)_3.9H_2O$ in 50 mL distilled water.
2. Prepare working standards of different concentrations by step-wise dilution of the stock solution.

Preparation of standard solution

1. Prepare stock solution of cadmium (1000 mg/L) by dissolving 0.1016 g of $CdCl_2.2.5H_2O$ in nitric acid (0.1 mol/L).
2. Dilute to 50 mL.
3. Prepare working standards of different concentrations by step-wise dilution of the stock solution.

Purification of MWNTs

1. To remove carbonaceous and catalyst impurities on their surface, pretreat the multiwalled carbon nanotubes (MWNTs) by soaking 0.5 g of the commercial MWNTs in 50 mL ethanol (50%, v/v).
2. Sonicate the mixture for ca. 60 min to wipe off the carbonaceous impurities.
3. Collect the MWNTs by centrifugation.
4. Rinse with distilled water.
5. Disperse the MWNTs into 50 mL of HCl solution (1%, v/v).
6. Stir for ca. 4 h to remove the residual metallic catalyst.
7. Wash the collected MWNTs with distilled water until the pH of the wash-out solution is the same as distilled water.
8. Dry the received MWNTs at 100 °C in an oven.

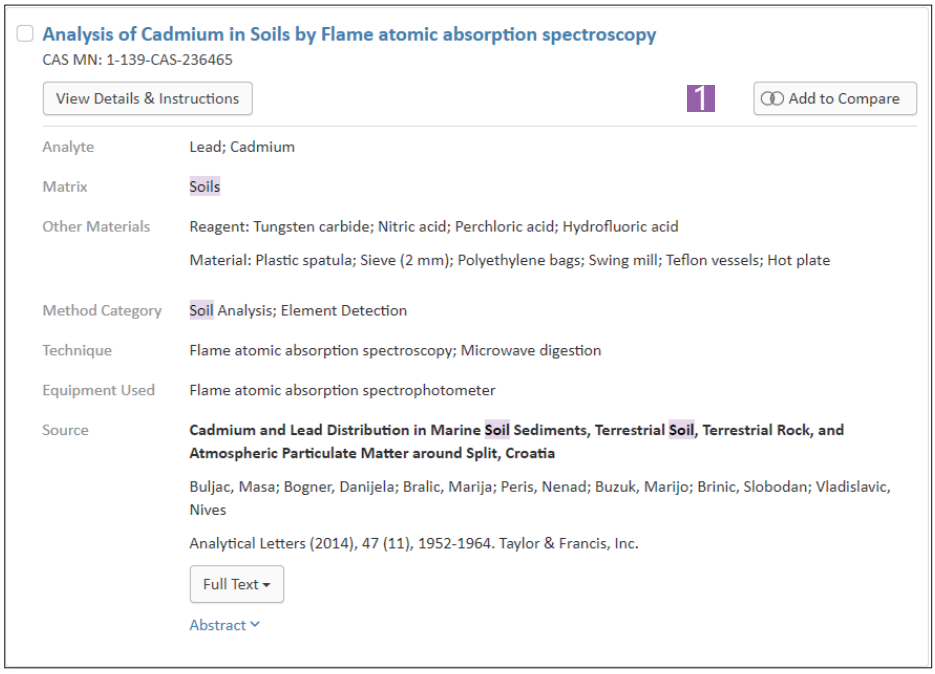
Oxidization of MWNTs

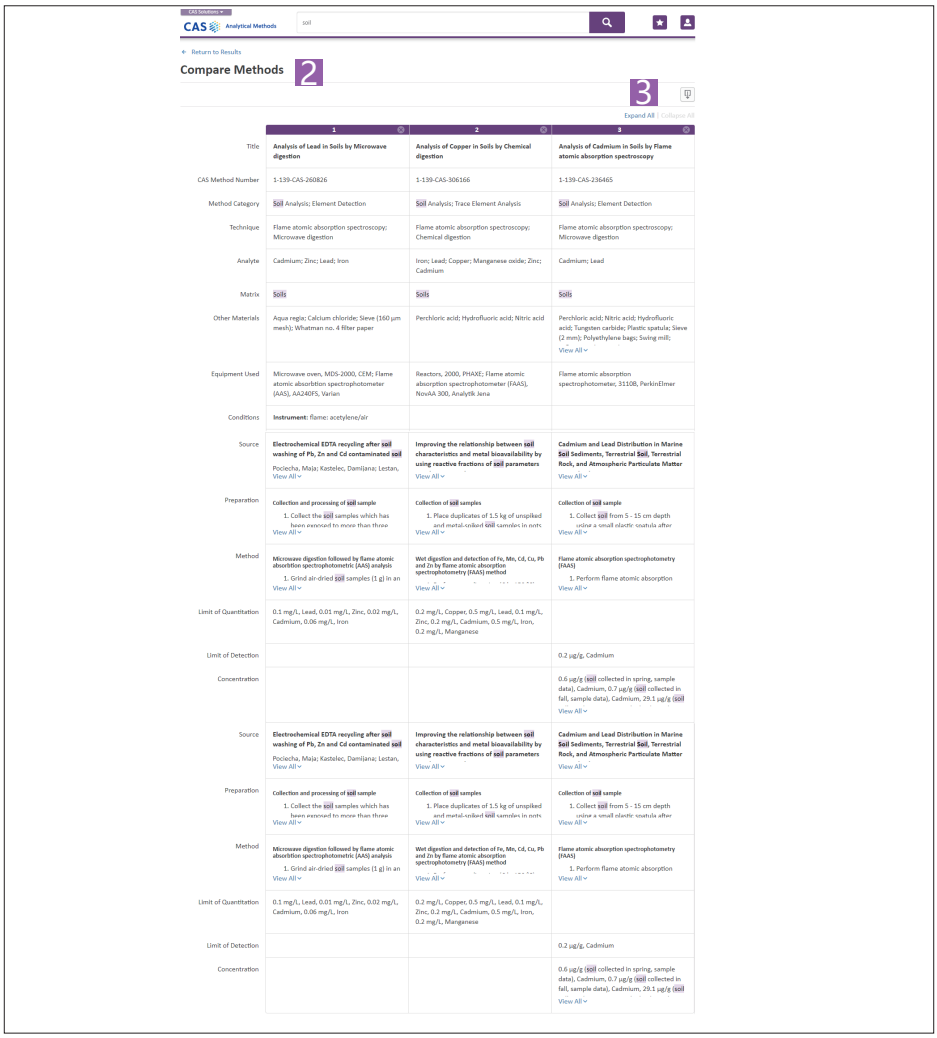
1. Take 0.5 g of the purified MWNTs in a 500 mL flask.
2. Mix with 200 mL of H_2SO_4/HNO_3 (3:1, v/v).
3. Sonicate for 11 h.
4. Dilute the mixture and wash thoroughly with distilled water.
5. Collect by centrifugation.
6. Dry at 100 °C.

Validation

Linearity Range	0.003-0.2 μg/L
Limit of Detection	1.3 ng/L
Precision	2.2% (RSD) at 0.1 μg/L
Concentration	0.33 ± 0.05 mg/kg (GBW07404, 0.35 ± 0.08 mg/kg certified value)

1 分析方法所用材料
2 书目信息
3 原文链接
4 摘要
5 使用仪器
6 实验条件
7 分析方法操作步骤
8 方法有效性



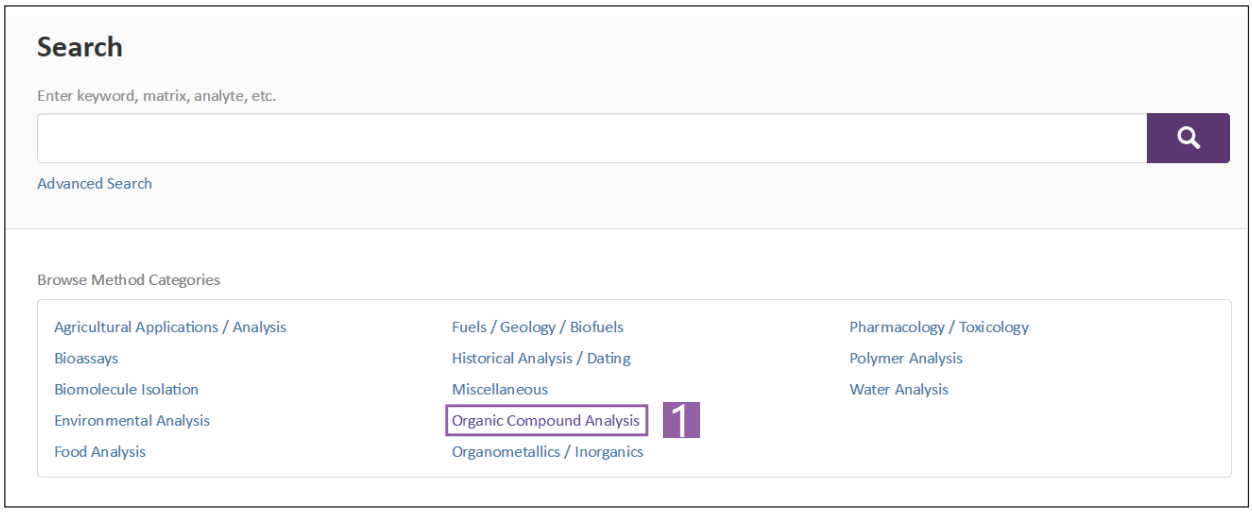


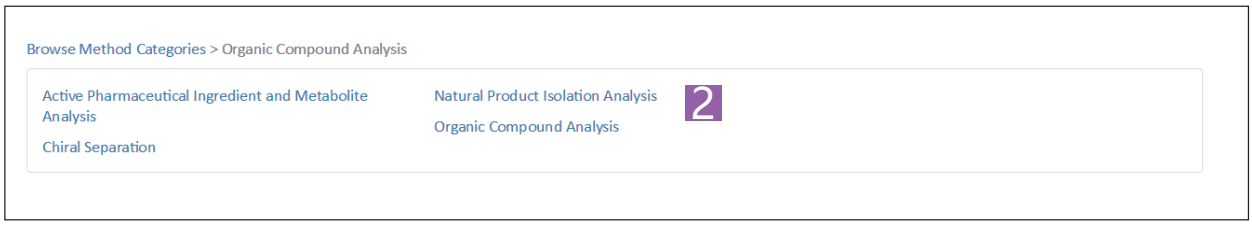
1 选择感兴趣的方法进行对比

2 一次最多可以比较三种不同方法，所有方法信息详情的内容都可以进行对比

3 可以将方法比较结果下载成pdf或者excel格式文件到本地电脑

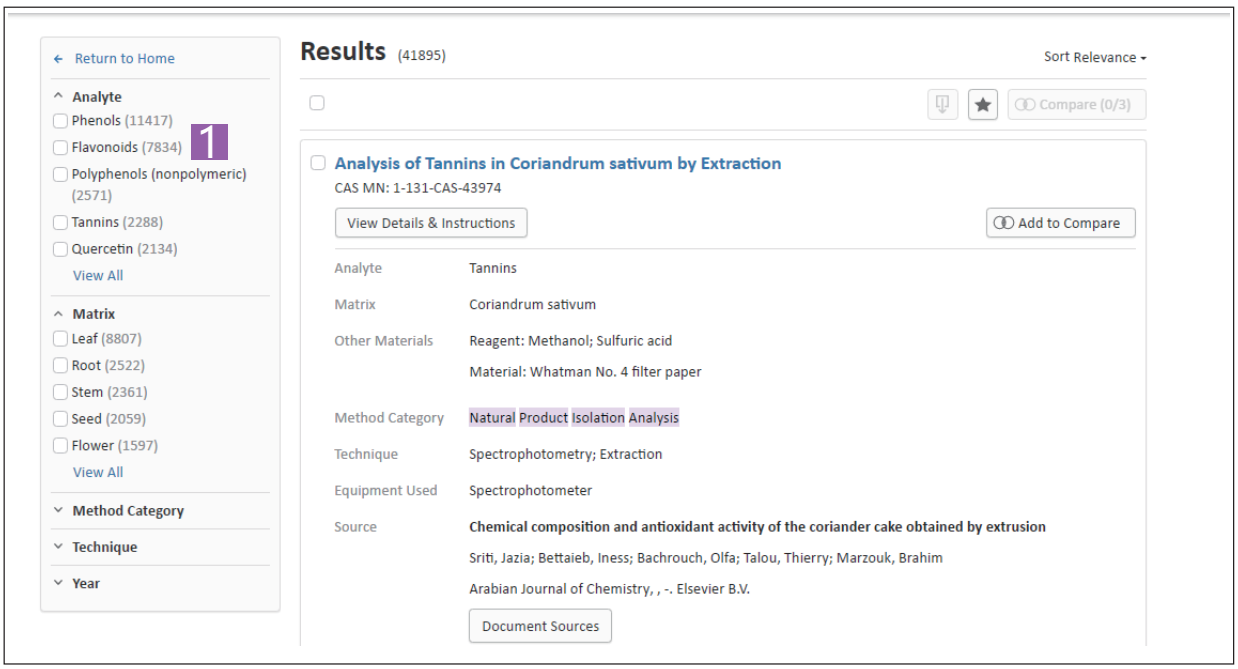
天然产物分离



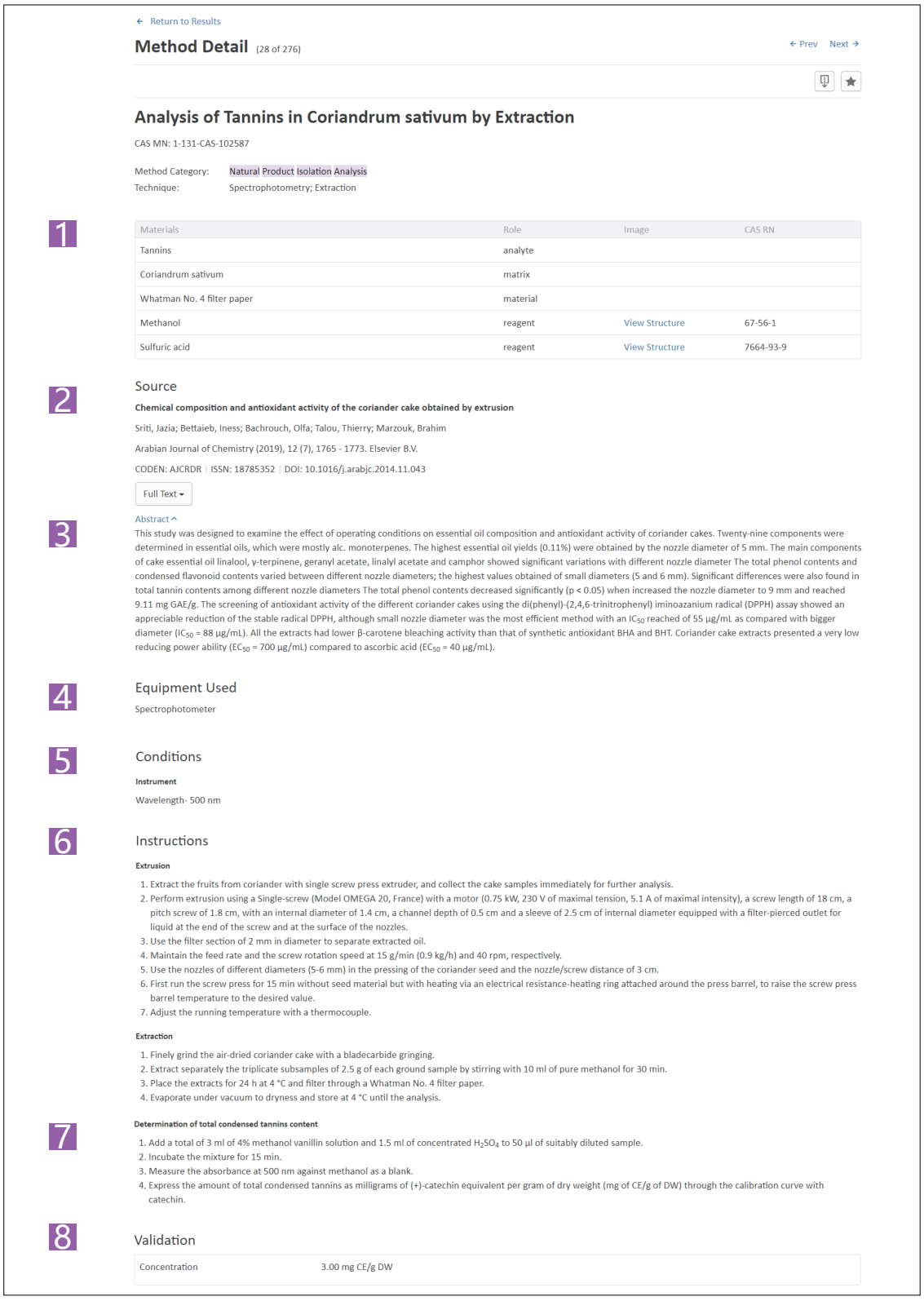


1 浏览方法分类，选择有机化合物分析

2 获得全部关于天然产物分离/分析的文献



1 根据需要，对相应的分离物、基质进行筛选



Return to Results

Method Detail (28 of 276)

← Prev Next →

Analysis of Tannins in Coriandrum sativum by Extraction

CAS MN: 1-131-CAS-102587

Method Category: Natural Product Isolation Analysis
Technique: Spectrophotometry; Extraction

1

Materials	Role	Image	CAS RN
Tannins	analyte		
Coriandrum sativum	matrix		
Whatman No. 4 filter paper	material		
Methanol	reagent	View Structure	67-56-1
Sulfuric acid	reagent	View Structure	7664-93-9

2 Source

Chemical composition and antioxidant activity of the coriander cake obtained by extrusion

Sriti, Jazia; Bettaieb, Iness; Bachrouch, Olfa; Talou, Thierry; Marzouk, Brahim

Arabian Journal of Chemistry (2019), 12 (7), 1765 - 1773. Elsevier B.V.

CODEN: AJCRDR | ISSN: 18785352 | DOI: 10.1016/j.arabjc.2014.11.043

Full Text

3 Abstract

This study was designed to examine the effect of operating conditions on essential oil composition and antioxidant activity of coriander cakes. Twenty-nine components were determined in essential oils, which were mostly alc. monoterpenes. The highest essential oil yields (0.11%) were obtained by the nozzle diameter of 5 mm. The main components of cake essential oil linalool, γ-terpinene, geranyl acetate, linalyl acetate and camphor showed significant variations with different nozzle diameter The total phenol contents and condensed flavonoid contents varied between different nozzle diameters; the highest values obtained of small diameters (5 and 6 mm). Significant differences were also found in total tannin contents among different nozzle diameters The total phenol contents decreased significantly ($p < 0.05$) when increased the nozzle diameter to 9 mm and reached 9.11 mg GAE/g. The screening of antioxidant activity of the different coriander cakes using the di(phenyl)-(2,4,6-trinitrophenyl) iminoazanium radical (DPPH) assay showed an appreciable reduction of the stable radical DPPH, although small nozzle diameter was the most efficient method with an IC_{50} reached of 55 μg/mL as compared with bigger diameter (IC_{50} = 88 μg/mL). All the extracts had lower β-carotene bleaching activity than that of synthetic antioxidant BHA and BHT. Coriander cake extracts presented a very low reducing power ability (EC_{50} = 700 μg/mL) compared to ascorbic acid (EC_{50} = 40 μg/mL).

4 Equipment Used

Spectrophotometer

5 Conditions

Instrument

Wavelength- 500 nm

6 Instructions

Extrusion

1. Extract the fruits from coriander with single screw press extruder, and collect the cake samples immediately for further analysis.
2. Perform extrusion using a Single-screw (Model OMEGA 20, France) with a motor (0.75 kW, 230 V of maximal tension, 5.1 A of maximal intensity), a screw length of 18 cm, a pitch screw of 1.8 cm, with an internal diameter of 1.4 cm, a channel depth of 0.5 cm and a sleeve of 2.5 cm of internal diameter equipped with a filter-pierced outlet for liquid at the end of the screw and at the surface of the nozzles.
3. Use the filter section of 2 mm in diameter to separate extracted oil.
4. Maintain the feed rate and the screw rotation speed at 15 g/min (0.9 kg/h) and 40 rpm, respectively.
5. Use the nozzles of different diameters (5-6 mm) in the pressing of the coriander seed and the nozzle/screw distance of 3 cm.
6. First run the screw press for 15 min without seed material but with heating via an electrical resistance-heating ring attached around the press barrel, to raise the screw press barrel temperature to the desired value.
7. Adjust the running temperature with a thermocouple.

Extraction

1. Finely grind the air-dried coriander cake with a bladecarbide gringing.
2. Extract separately the triplicate subsamples of 2.5 g of each ground sample by stirring with 10 ml of pure methanol for 30 min.
3. Place the extracts for 24 h at 4 °C and filter through a Whatman No. 4 filter paper.
4. Evaporate under vacuum to dryness and store at 4 °C until the analysis.

7 **Determination of total condensed tannins content**

1. Add a total of 3 ml of 4% methanol vanillin solution and 1.5 ml of concentrated H_2SO_4 to 50 μl of suitably diluted sample.
2. Incubate the mixture for 15 min.
3. Measure the absorbance at 500 nm against methanol as a blank.
4. Express the amount of total condensed tannins as milligrams of (+)-catechin equivalent per gram of dry weight (mg of CE/g of DW) through the calibration curve with catechin.

8 Validation

Concentration	3.00 mg CE/g DW

1 实验所用材料
2 书目信息
3 摘要
4 使用的仪器
5 实验条件
6 提取、分离步骤详情
7 产物的表征
8 方法有效性

CAS Analytical Methods 为新增模块，用户需要与所在单位确认是否已获得访问权限。如需更多帮助，请联系 china@acs-i.org, 010-62508026/7 。