

# CAS SCIFINDER DISCOVERY PLATFORM™ 持续增值的内容及数据创新服务



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美国化学文摘社(CAS)北京代表处

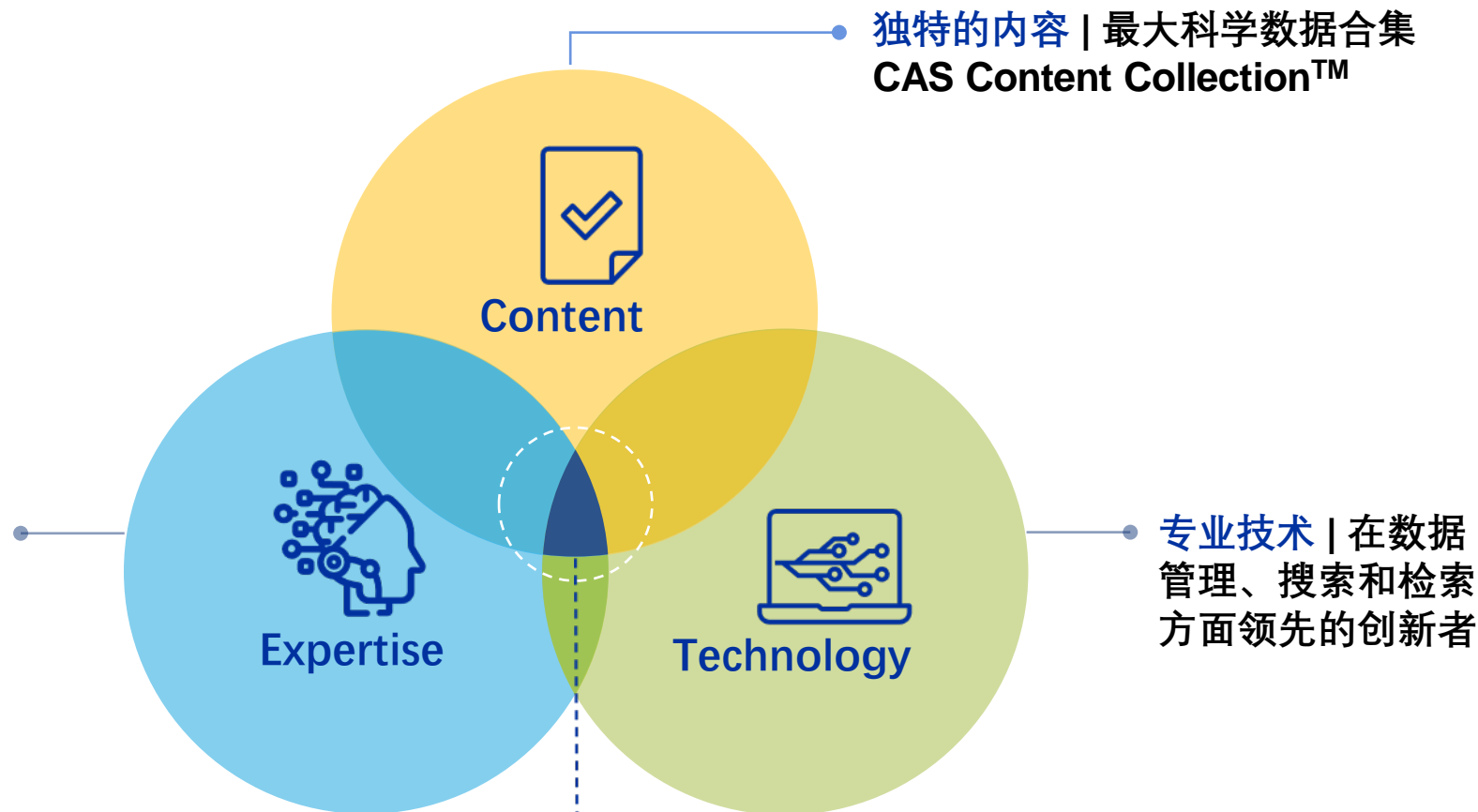
# 提纲

- 独特的增值内容结合先进的技术
- 创新的数据服务及应用案例
- 规避知识产权风险的独特解决方案
- 综合材料、健康与能源等多学科应用

# 关于CAS

## 我们有什么

专业知识 | 多学科背景的科学家和技术专家，精通50多国语言



独特的内容 | 最大科学数据合集  
CAS Content Collection™

专业技术 | 在数据管理、搜索和检索方面领先的创新者

我们在全球出版的科学数据间建立关联，  
将科学数据转化为更好的洞察力

# CAS独特的解决方案和能力

加速创新之旅



Informing and accelerating the innovation process end to end

## CAS SciFinder Discovery Platform™

为研究人员提供他们所需要的信息，加速科学发现市场化并优化利润率

## STN IP Protection Suite™

确保知识产权得到保护，并找到机会拓展新市场

## CAS Custom Services<sup>SM</sup>

定制数据、分析和见解，最大化信息资产的价值，推动数字化成功

**独特的内容** | 最大科学数据合集

**专业技术** | 为整个创新之旅提供信息

**专业知识** | 多学科背景的科学家和技术专家

# CAS 内容合集来源于化学、超越于化学

## 五大类80小类

### — 生物化学

- 农化产品管控信息、生化遗传学、发酵、免疫化学、药理学

### — 有机化学各领域：

- 氨基酸、生物分子、碳水化合物、有机金属化合物、类固醇

### — 大分子化学各领域：

- 纤维素、木质素、造纸；涂料、墨水

- 染料、有机颜料；合成橡胶；纺织品、纤维

### — 应用化学各领域：

- 大气污染、陶瓷、精油、化妆品、化石燃料、黑色金属、合金

### — 物理、无机、分析化学各领域：

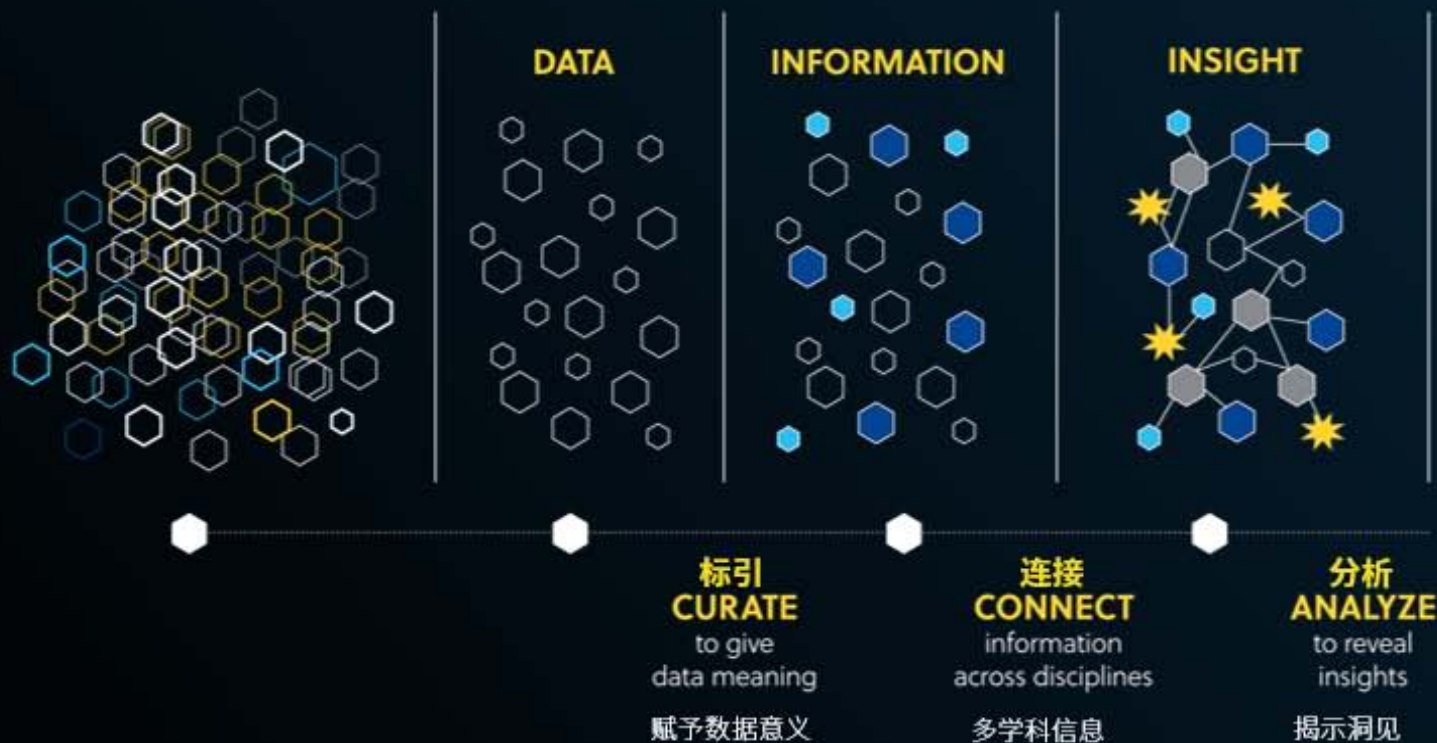
- 表面化学、催化剂、相平衡、核现象、电化学

来源：<https://www.cas.org/support/documentation/references/ca-sections>

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# CAS的科学家们标引、连接和分析科学知识和分析科学知识



# 提纲

- 独特的增值内容结合先进的技术
- 创新的数据服务及应用案例
- 规避知识产权风险的独特解决方案
- 综合材料、健康与能源等多学科应用

# CAS SciFinder Discovery Platform助力分子生物学家

## 提升生物学研究

The screenshot shows the search interface with a sidebar on the left containing navigation options: All, Substances, Reactions, References, Suppliers, Sequences (highlighted), and Retrosynthesis. The main area is titled 'Sequences' and includes a search input field, 'Upload Sequence' and 'Clear Search' buttons, and a 'Sequence Type' selector set to 'Protein'. Below this are 'Search Within' options for Nucleotides and Proteins, and a checked option for 'Include NCBI Sequences'. A 'Start Sequence Search' button is at the bottom right. A 'Feedback' icon is also present.

- 超过14亿条序列
- 涵盖专利、非专利文献披露的序列
- 专有的CAS人工标引的化学修饰序列
- NCBI中的序列
- 可实现新颖性、创造性检索

The screenshot shows the search results interface for a query. The title is 'Sequences search for your query'. The 'References' tab is active. The 'Motif Search Details' section shows: Sequence Type: Nucleotide, NCBI Included: No, Query Coverage: 90%, E-Value: 10. The 'Bioscape Analysis' section includes a 'Create Bioscape Analysis' button. The 'Filter by' section has sliders for E-Value, Query Coverage %, Subject Coverage %, Alignment Identity %, and Sequence Length. The 'Query Details' section shows 'Seq 1: 1 GCAGACTACTATGAAUUU 19'. The '13 Results' section shows two results, both with 100% Alignment Identity. Result 1 shows a sequence alignment between Query (1-19) and Subject (1-23) with 19 matches and 0 mismatches. Result 2 shows a sequence alignment between Query (1-19) and Subject (1-122) with 19 matches and 0 mismatches. The 'Alignment Data' section shows the sequence alignment for each result.



# CAS SciFinder Discovery Platform 助力生物学家与药 化科学家

构效关系、ADME、毒性

Structure Activity Relationships



Absorption, Distribution, Metabolism, and Excretion Data



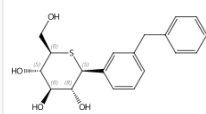
Toxicity



Structure Activity Relationships



1251903-24-8



C<sub>19</sub>H<sub>22</sub>O<sub>4</sub>S  
(1S)-1,5-Dideoxy-1,5-epithio-1-  
C-[3-(phenylmethyl)phenyl]-D-  
glucitol

▽ Ligand ▾ ▾ Target ▾ ▾ Function ▾ ▾ Parameter ▾ ▾ Organism ▾

Ligand	Target	Function	Parameter	Value	Disease	Organism	Assay
1251903-24-8	Sodium-dependent glucose transporter SGLT2	-	IC50	0.0278 μM	-	HUMAN	<a href="#">View Detail</a>
1251903-24-8	SGLT1	-	IC50	0.246 μM	-	HUMAN	<a href="#">View Detail</a>
1251903-24-8	SGLT1	-	Selectivity index	8.8	-	HUMAN	<a href="#">View Detail</a>
898537-55-8	Sodium-dependent glucose transporter SGLT2	-	IC50	0.00268 μM	-	HUMAN	<a href="#">View Detail</a>
898537-55-8	SGLT1	-	IC50	17.3 μM	-	HUMAN	<a href="#">View Detail</a>
898537-55-8	SGLT1	-	Selectivity index	6400	-	HUMAN	<a href="#">View Detail</a>
898537-47-8	Sodium-dependent glucose transporter SGLT2	-	IC50	0.00151 μM	-	HUMAN	<a href="#">View Detail</a>
898537-47-8	SGLT1	-	IC50	3.34 μM	-	HUMAN	<a href="#">View Detail</a>
898537-47-8	SGLT1	-	Selectivity index	2210	-	HUMAN	<a href="#">View Detail</a>

Absorption, Distribution, Metabolism, and Excretion Data



▽ Ligand ▾ ▾ Target ▾ ▾ Parameter ▾ ▾ Disease ▾ ▾ Organism ▾

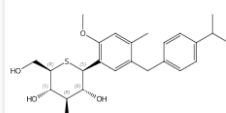
Ligand	Target	Function	Parameter	Value	Disease	Organism	Assay
1222459-76-8	Homo sapiens	-	Metabolic Stability	Not Tested	-	HUMAN	<a href="#">View Detail</a>
1222459-76-8	Homo sapiens	-	Stability	3.9 %	-	HUMAN	<a href="#">View Detail</a>
898537-55-8	Homo sapiens	-	Metabolic Stability	91 %	-	HUMAN	<a href="#">View Detail</a>
898537-55-8	Homo sapiens	-	Serum protein binding	99.1 %	-	-	<a href="#">View Detail</a>

Toxicity



▽ Ligand ▾ ▾ Target ▾ ▾ Parameter ▾ ▾ Organism ▾

898537-55-8



C<sub>24</sub>H<sub>32</sub>O<sub>5</sub>S  
(1S)-1,5-Dideoxy-1,5-epithio-1-  
C-[2-methoxy-4-methyl-5-[[4-  
(1-methylethyl)phenyl]...

Ligand	Target	Function	Parameter	Value	Disease	Organism	Assay
1251903-24-8	SGLT1	-	Selectivity index	8.8	-	HUMAN	<a href="#">View Detail</a>
898537-55-8	SGLT1	-	Selectivity index	6400	-	HUMAN	<a href="#">View Detail</a>
898537-47-8	SGLT1	-	Selectivity index	2210	-	HUMAN	<a href="#">View Detail</a>
898537-45-6	SGLT1	-	Selectivity index	1650	-	HUMAN	<a href="#">View Detail</a>
898537-32-1	SGLT1	-	Selectivity index	2040	-	HUMAN	<a href="#">View Detail</a>
898537-30-9	SGLT1	-	Selectivity index	338	-	HUMAN	<a href="#">View Detail</a>
898537-26-3	SGLT1	-	Selectivity index	337	-	HUMAN	<a href="#">View Detail</a>

# CAS SciFinder Discovery Platform 助力分析科学家

## CAS科学家增值标引的分析实验详情

### Analysis of Tofogliflozin in Blood plasma by Solvent extraction

CAS MN: 1-101-CAS-323779

Method Category: Active Pharmaceutical Ingredient and Metabolite Analysis

Technique: Liquid chromatography; Electrospray ionization tandem mass spectrometry; Solvent extraction

Materials	Role	Image	
Tofogliflozin	analyte	<a href="#">View Structure</a>	<a href="#">903565-83-3</a>
Blood plasma	matrix		
Quicksorb ODS (2.1 mm i.d. × 150 mm, 5 μm size) column	material		
Methanol	reagent	<a href="#">View Structure</a>	67-56-1
Sodium carboxymethyl cellulose	reagent	<a href="#">View Structure</a>	9004-32-4
Acetonitrile	reagent	<a href="#">View Structure</a>	75-05-8
Heparin	reagent		9005-49-6
Ammonium acetate	reagent	<a href="#">View Structure</a>	631-61-8
tert-Butyl methyl ether	reagent	<a href="#">View Structure</a>	1634-04-4

### Source

Development and validation of an LC-MS/MS method for the determination of tofogliflozin in plasma and its application to a pharmacokinetic study in rats

Kobuchi, Shinji; Matsuno, Megumi; Fukuda, Etsuko; Ito, Yukako; Sakaeda, Toshiyuki

Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences (2016), 1027, 227 - 233. Elsevier B.V.

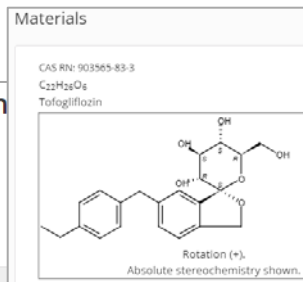
CODEN: JCBAAL | ISSN: 15700232 | DOI: 10.1016/j.jchromb.2016.05.053

[Full Text](#)

[View in CAS SciFinder](#)

### Abstract

Tofogliflozin is a novel selective inhibitor of sodium-dependent glucose co-transporter-2 (SGLT2) and has been developed for the treatment of patients with type 2 diabetes mellitus. In this study, a highly sensitive and specific liquid chromatog.-tandem mass spectrometry (LC-MS/MS) method for the quantitation of tofogliflozin in rat plasma was developed and validated. The detection was performed using an API 3200 triple-quadrupole mass spectrometer with selected reaction monitoring (SRM) in the pos. electrospray ionization mode. The SRM transitions were  $m/z = 387.1 [M+H]^+ \rightarrow 267.1$  for tofogliflozin and  $m/z = 451.2 [M+H]^+ \rightarrow 71.0$  for empagliflozin (internal standard: I.S.). Chromatog. separation was performed on a Quicksorb ODS (2.1 mm i.d. × 150 mm, 5 μm size) using isocratic elution with acetonitrile/10 mM ammonium acetate (50:50, v/v) as the mobile phase at a flow rate of



### Equipment Used

LC system, Shimadzu Corp., Kyoto, Japan

Mass spectrometer, API 3200, Applied Biosystems, CA, USA

Micropump, LC-10AD, Shimadzu Corp., Kyoto, Japan

Autosampler, AS8020, Toso, Tokyo, Japan

### Conditions

#### Instrument

column: Quicksorb ODS (2.1 mm i.d. × 150 mm, 5 μm size); column temperature: 50 °C; mobile phase: acetonitrile/10 mM ammonium acetate (50:50, v/v) as mobile phase; flow rate: 0.2 mL/min; injection volume: 30 μL; run time: 4.0 min

ionization mode: positive ion mode; ion spray voltage: 5000 V; source temperature: 500 °C; curtain gas: 5.0 arbitrary units; collision gas: 5.0 arbitrary units; ion source gas: 1 of 50 arbitrary units and gas: 2 of 70 arbitrary units; declustering potential (DP): 31.0 V; entrance potential (EP): 10.5 V for tofogliflozin, 6.5 V for internal standard; collision energy (CE): 20.0 V for tofogliflozin, 31.0 V for internal standard; collision exit potential (CXP): 6.0 V for tofogliflozin, 1.0 V for internal standard

### Instructions

#### Collection of plasma samples

1. Administer male wistar rats orally (p.o.) with 0.4 mg/kg tofogliflozin solution (0.2 mg/mL in 1% carboxymethyl-cellulose sodium in distilled water).
2. Collect the blood samples (0.25 mL) from the external left jugular vein.
3. Transfer the blood samples to heparinized centrifuge tubes and centrifuge at 12,000 rpm for 15 min to obtain plasma samples.
4. Store the plasma samples at -80 °C.

#### Preparation of stock solutions, calibration curves

1. Prepare the stock solutions of tofogliflozin
2. Prepare the working solutions by further diluting the stock solutions of tofogliflozin.
3. Prepare internal standard (IS) working solutions
4. Prepare the calibration standard samples by diluting the stock solutions of tofogliflozin and IS standards with concentrations ranging from 0.5 to 1000 ng/mL, respectively
5. Prepare the quality control (QC) samples at 100 ng/mL
6. Add 10 μL aliquot of the IS working solution to the sample and standard solutions (454.5 ng/mL).

#### Solvent extraction

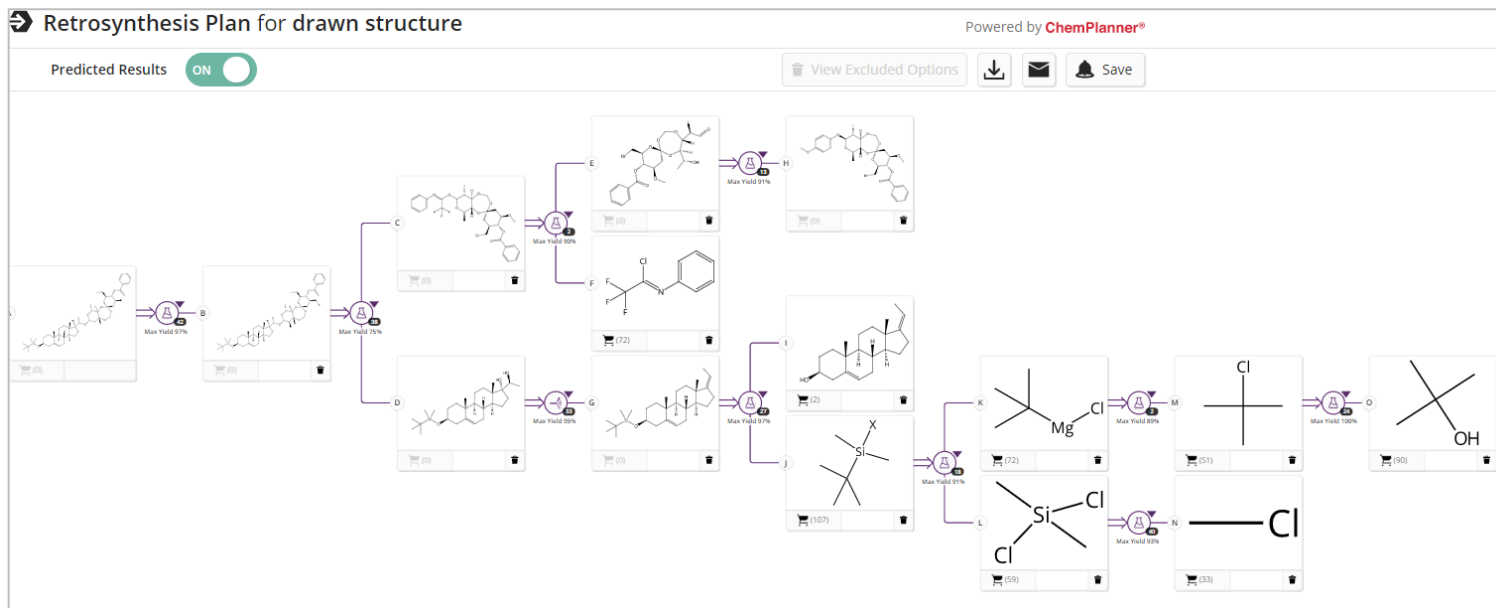
1. Add 100 μL of acetonitrile to standard and sample solutions
2. Mix the sample vigorously for 15 s.
3. Add 1 mL of tert-butyl methyl ether to the sample and standard solutions
4. Centrifuge the mixture for 15 min at 12,000 rpm
5. Transfer the supernatant to a fresh centrifuge tube and evaporate to dryness under a stream of nitrogen at 60 °C.
6. Add 100 μL of mobile phase (acetonitrile/10 mM ammonium acetate (50:50, v/v)) to the resulting residue vortex for over 30 s and transfer to HPLC vial.

### Validation

Linearity Range	0.5 - 1000 ng/mL
Limit of Quantitation	0.5 ng/mL (LLOQ)
Recovery	115.7 ± 13.3, 90.2 ± 4.7 and 87.5 ± 6.1% in 1.5, 100 and 500 ng/mL spiked concentration, respectively
Accuracy	-2.1, 1.1 and 1.3% (bias, intra-day); -8.8, -4.1 and -0.7% (bias, inter-day) in 1.5, 100 and 500 ng/mL spiked concentration, respectively
Precision	11.5, 9.2 and 5.3% (CV, intra-day); 11.7, 8.9 and 4.1% (CV, inter-day) in 1.5, 100 and 500 ng/mL spiked concentration, respectively
Retention Time	2.3 min

# CAS SciFinder Discovery Platform 助力药化与合成化学家

## 利用机器学习、人工智能技术进行逆合成路线分析



- 合成新分子
- 合成放大实验
- 发现突破现有合成方法的新机会

Products	<a href="#">(6S,9S)-5,6,7,8,9,10,12,13,14,15,16,17-Dodecahydro-6-(methoxymethyl)-4,7-dioxo-4H-pyrazolo[5,1-f][1,4,7,10]oxatriazacyclohexadecine-9-carboxylic acid</a> , Yield: 75%								
Reactants	<a href="#">2242434-22-4</a>								
Reagents	<a href="#">Hydrogen</a>								
Catalysts	<a href="#">Grubbs second generation catalyst</a> <a href="#">Palladium</a>								
Solvents	<a href="#">Toluene</a> <a href="#">Methanol</a>								
Procedure	<ol style="list-style-type: none"><li>1. Degas a solution of benzyl O-allyl-N-(O-methyl-N-(1-(pent-4-en-1-yl)-1H-pyrazole-5-carbonyl)-L-seryl)-L-serinate (0.20 mmol, 1.0 equiv) in toluene (0.01 molar) with dry nitrogen for 15 minutes.</li><li>2. Stir the mixture for 5 minutes at 100 °C.</li><li>3. Inject the Grubbs second-generation catalyst (0.10 equiv) in toluene (0.01 molar) to a degassed solution with a syringe for 30 minutes.</li><li>4. Stir the reaction mixture for additional half an hour.</li><li>5. Cool the reaction mixture to room temperature.</li><li>6. Evaporate the solvent under reduced pressure.</li><li>7. Purify by flash chromatography on silica gel.</li><li>8. Re-dissolve the resulting products in methanol (0.05 molar).</li><li>9. Stir the reaction mixture overnight with 10% Pd/C (0.10 equiv).</li><li>10. Filter the mixture over Celite and concentrate to obtain (6S,9S)-5-(methoxymethyl)-4,7-dioxo-5,6,7,8,9,10,12,13,14,15,16,17-dodecahydro-4H-pyrazolo[5,1-f][1,4,7,10]oxatriazacyclohexadecine-9-carboxylic acid.</li></ol>								
Transformation	Addition of Alkanes to Alkenes Hydrolysis or Hydrogenolysis of Carboxylic Esters or Thioesters								
Characterization Data	<p>^(6S,9S)-5,6,7,8,9,10,12,13,14,15,16,17-Dodecahydro-6-(methoxymethyl)-4,7-dioxo-4H-pyrazolo[5,1-f][1,4,7,10]oxatriazacyclohexadecine-9-carboxylic acid</p> <table border="1"><tr><td>Proton NMR Spectrum</td><td>(500 MHz, CDCl<sub>3</sub>) δ 7.47 (d, J = 2.0 Hz, 1H), 6.60 (d, J = 2.0 Hz, 1H), 5.15-5.06 (m, 1H), 4.75-4.69 (m, 1H), 4.58-4.52 (m, 1H), 4.19 (dt, J = 13.5, 5.0 Hz, 1H), 3.90 (dd, J = 10.0, 5.5 Hz, 1H), 3.75 (dd, J = 10.0, 4.0 Hz, 1H), 3.70-3.62 (m, 2H), 3.48-3.28 (m, 5H), 2.01-1.90 (m, 1H), 1.76-1.66 (m, 1H), 1.51-1.29 (m, 3H), 1.28-0.99 (m, 3H) ppm</td></tr><tr><td>Carbon-13 NMR</td><td>(100 MHz, DMSO) δ 171.18, 169.36, 159.65, 136.90, 134.37, 108.05, 71.09, 69.92, 69.17, 58.08, 52.53, 52.00, 50.80, 28.57, 26.80, 24.45, 24.39</td></tr><tr><td>Mass Spectrum</td><td>383 [M + H]<sup>+</sup></td></tr><tr><td>State</td><td>white solid</td></tr></table>	Proton NMR Spectrum	(500 MHz, CDCl <sub>3</sub> ) δ 7.47 (d, J = 2.0 Hz, 1H), 6.60 (d, J = 2.0 Hz, 1H), 5.15-5.06 (m, 1H), 4.75-4.69 (m, 1H), 4.58-4.52 (m, 1H), 4.19 (dt, J = 13.5, 5.0 Hz, 1H), 3.90 (dd, J = 10.0, 5.5 Hz, 1H), 3.75 (dd, J = 10.0, 4.0 Hz, 1H), 3.70-3.62 (m, 2H), 3.48-3.28 (m, 5H), 2.01-1.90 (m, 1H), 1.76-1.66 (m, 1H), 1.51-1.29 (m, 3H), 1.28-0.99 (m, 3H) ppm	Carbon-13 NMR	(100 MHz, DMSO) δ 171.18, 169.36, 159.65, 136.90, 134.37, 108.05, 71.09, 69.92, 69.17, 58.08, 52.53, 52.00, 50.80, 28.57, 26.80, 24.45, 24.39	Mass Spectrum	383 [M + H] <sup>+</sup>	State	white solid
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Mass Spectrum	383 [M + H] <sup>+</sup>								
State	white solid								
CAS Method Number	3-248-CAS-19350113								
Transformations	<ol style="list-style-type: none"><li>1. Addition of Alkanes to Alkenes</li><li>2. Hydrolysis or Hydrogenolysis of Carboxylic Esters or Thioesters</li></ol>								
Reaction Notes	ring closing metathesis in stage 1								

CAS科学家增值的合成制备详情

# CAS SciFinder Discovery Platform 助力材料科学家

开发安全有效的产品

**Lithium Ion Batteries: Battery**

配方成分、功能、用量

Purpose	Target	Delivery Route	Physical Form
battery	-	-	-

Formulation Ingredients

Component	Function	Amount Reported	Optionality
Group: additional ingredients			
Lithium nitride	active agent	72 % (w)	Mandatory
Potassium chlorate	-	110 g	Mandatory
Sulfuric acid	-	360 mL	Mandatory
Nitric acid	-	180 mL	Mandatory
Water	-	8 L	Mandatory
Huadong graphite	-	20 g	Mandatory
NGPS	-	-	Mandatory
stannous oxide	-	3 mol	Mandatory
Li2O-Si mixture	-	72 % (w)	Mandatory

- 高效：一键式获取活性成分及辅料的相关信息
- 启发：基于期刊、专利和产品说明书中标引的配方数据获得见解
- 全面：评估成分、查找可替代供应商及监管信息

相似配方

More Formulations like this... **NEW**

Lithium Ion Batteries: Battery  
Purpose: battery  
Target: -  
Delivery Route: -  
Physical Form: -

Lithium Ion Batteries: Battery  
Purpose: battery  
Target: -  
Delivery Route: -  
Physical Form: -

Lithium Ion Batteries: Battery  
Purpose: battery  
Target: -  
Delivery Route: -  
Physical Form: -

Lithium Ion Batteries: Battery  
Purpose: battery  
Target: -  
Delivery Route: -  
Physical Form: -

工艺信息

Process

A reaction flask containing a magnetic stir bar was charged with sulfuric acid and nitric acid and cooled by immersion in an ice bath. the acid mixture was stirred and allowed to cool for few min, and graphite was added under vigorous stirring to avoid agglomeration. after the graphite powder was well dispersed, potassium chlorate was added slowly to avoid sudden increases in temperature. the reaction flask was loosely capped to allow evolution of gas from the reaction mixture, which was stirred for few hours at room temperature. on completion of the reaction, the mixture was poured into deionized water and filtered. the slurry was spray-dried to recover an expandable graphite sample. in stage 1

Source Patent

Nano graphene platelet-based composite anode compositions for lithium ion batteries

Assignee : Nanotek Instruments, Inc.  
US20090117467  
Language: English  
Location: Example 2

Patent PDF View in CAS SciFinder®

# 提纲

- 独特的增值内容结合先进的技术
- **创新的数据服务及应用案例**
- 规避知识产权风险的独特解决方案
- 综合材料、健康与能源等多学科应用

# CAS Custom Services<sup>SM</sup>

与CAS定制服务合作，推动数据分析取得成功

## 人工智能 & 机器学习

利用强大的预测能力揭示最佳的研究起点

- 定制化数据集
- 数据构架
- 分子描述符
- 咨询

## 工作流程整合

快速获取信息，提高研发效率

- 电子实验记录本 (ELN) 集成
- 数据协调 (标准化数据、定制化标引)
- 灵活安全的集成API

内容许可服务

## 知识管理

构建数字化研发成功所需的高质量数据基础

- 咨询和培训
- 数据管理
- 数据治理
- 定制化检索工具

## 高级分析

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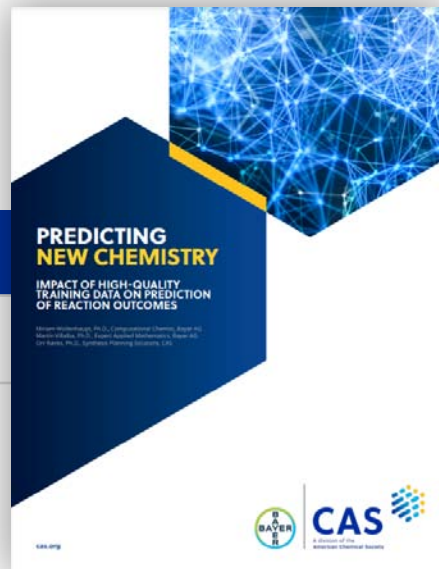
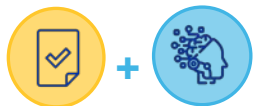
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# 在极难突破的科学领域， 改进反应预测结果



训练数据集	预测精度
基准数据集	16%
+CAS反应数据集	48%

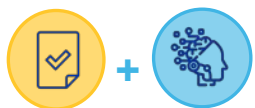
训练数据集	数据组成
基准数据集	商业可获得的正样本数据（800万）和负样本数据（2400万）
+CAS反应数据集	拜尔的3200万基准数据+CAS定制的14,500条特定的反应数据

## 影响

用CAS科学家标引的反应数据集进行训练时，准确率提高到48%——提高了32个百分点。

这种在“罕见”反应类别中增强的预测能力贡献了新的、有用的结果，为极难突破的科学领域开辟了道路。

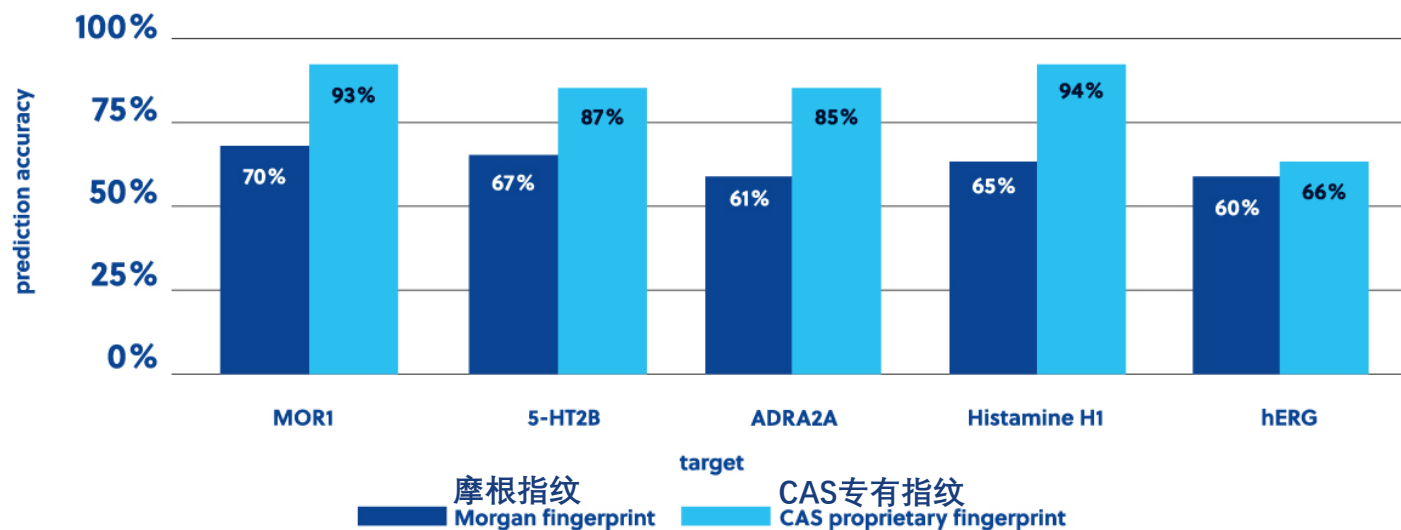
# 数据质量对机器学习预测的影响



与剑桥大学合作，测试给定算法所使用的化学描述符的质量对机器学习预测的影响。

使用高质量的CAS数据时，分类精度提升30%。

这种精确度的提高使团队能够探索更广阔的领域，减少误报，并将精力集中在最有前景的化合物上。



# 提纲

- 独特的增值内容结合先进的技术
- 创新的数据服务及应用案例
- **规避知识产权风险的独特解决方案**
- 综合材料、健康与能源等多学科应用

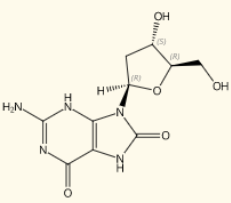
# 独特专利解决方案—CAS PatentPak®

CAS PatentPak

PAGE 206 / 284 ZOOM DOWNLOAD PDF PDF+

Key Substances in Patent

CAS RN 88847-89-6



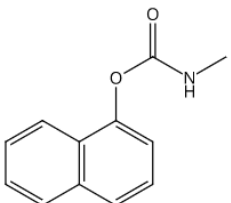
Analyst Markup Locations (1)  
Page 206

CAS RN 518012-52-7

Endocrine gland-derived vascular endothelial growth factor

Analyst Markup Locations (1)  
Page 206

CAS RN 63-25-2



Analyst Markup Locations (2)

WO 2007/146968

PCT/US2007/071052

205

Factor, LMIR5/CD300LB, CX3CR1, CX3CL1, LMIR6/CD300LE, CXCR4, LRP-1, CXCR6, M-CSF R, DEP-1/CD148, MD-1, DNAM-1, MD-2, EMMPRIN/CD147, MMR, Endoglin/CD105, NCAM-L1, Fc gamma RI/CD64, PSGL-1, Fc gamma RIII/CD16, RP105, G-CSF R, L-Selectin, GM-CSF R alpha, Siglec-3/CD33, HVEM/TNFRSF14, SLAM, ICAM-1/CD54, TCCR/WSX-1, ICAM-2/CD102, TREM-1, IL-6 R, TREM-2, CXCR1/IL-8 RA, TREM-3 and TREML1/TLT-1.

26. The protein according to claim 13 wherein the Dendritic cell receptor is selected from the group consisting of CD36/SR-B3, LOX-1/SR-E1, CD68, MARCO, CD163, SR-AI/MSR, CD5L, SREC-I, CL-P1/COLEC12, SREC-II, LIMPII/SR-B2, RP105, TLR4, TLR1, TLR5, TLR2, TLR6, TLR3, TLR9, 4-1BB Ligand/TNFSF9, IL-12/IL-23 p40, 4-Amino-1,8-naphthalimide, ILT2/CD85j, CCL21/6Ckine, ILT3/CD85k, 8-oxo-dG, ILT4/CD85d, 8D6A, ILT5/CD85a, A2B5,

# 基于CAS科学家智慧和人工智能，对专利进行现有技术分析，为可专利性和专利自由实施策略提供信息支撑

## 现有技术分析

**Method for recycling lithium-ion battery**

Substances (79) Reactions (0) Citing (1) Citation Map

**PATENT**

Patent Number: WO2018006687  
Publication Date: 2018-01-11  
Application Number: WO2017-CN87908  
Application Date: 2017-06-12  
Kind Code: A1  
Assignee: GRST International Limited, China  
Source: World Intellectual Property Organization, CODEN: PIXXD2  
Database Information: AN: 2018:68828, CAN: 168:139007, CPlus

By: Ho, Kam Piu; Wang, Ranshi; Shen, Peihua

Provided herein is a method for recycling **Li-ion batteries**, comprising isolating a mixture of anode and cathode materials from waste **Li-ion batteries**. The separated electrode materials can easily be collected with high recovery rate, providing a rapid, efficient and low-cost method for recycling electrode materials from waste **Li-ion batteries**.

Figure 1

Keywords: recycling, **lithium ion battery**, anode, cathode, waste management

PatentPak View Get Prior Art Analysis Full Text

References from Prior Art Analysis for "Method for recycling lithium-ion battery"

Substances Reactions Citing Knowledge Graph

Filter Behavior: Filter by Exclude

Document Type: Journal (99), Patent (90), Review (15)

Language: English (135), Korean (20), Chinese (16), Japanese (7), German (5)

Publication Year: 2000 to 2016

Author

188 Results

Sort: Relevance View: Partial Abstract

1

**A novel method to recycle mixed cathode materials for lithium ion batteries**

By: Zou, Haiyang; Gratz, Eric; Apellan, Diran; Wang, Yan  
Green Chemistry (2013), 15(5), 1183-1191 | Language: English, Database: CPlus

The rechargeable Li ion (Li-ion) battery market was \$11.8 billion in 2011 and is expected to increase to \$50 billion by 2020. With developments in consumer electronics as well as hybrid and elec. vehicles, Li-ion batteries demand will continue to increase. However, Li-ion batteries are not widely recycled because currently it is not economically justifiable (in contrast, at present >97% Pb-acid batteries are recycled). So far, no com. methods are available to recycle Li-ion batteries with different cathode chemistries economically and efficiently. Considering the limited resources, environm...

View More

Full Text Substances (15) Reactions (0) Citing (220) Citation Map

2

**Cable-type secondary battery with integrated electrode with separation layer**

By: Kwon, Yo-Han; Oh, Byung-Hun; Jung, Hye-Ran; Kim, Je-Young  
World Intellectual Property Organization, WO2014182058 A1 2014-11-13 | Language: Korean, Database: CPlus

The present invention provides a cable-type secondary battery comprising: an internal electrode support body; and a sheet-type internal electrode-separation layer-external electrode composite formed in a spiraling manner around the external surface of the internal electrode support body, wherein the internal electrode-separation layer-external electrode composite is formed so that the internal electrode, the separation layer preventing a short circuit of the electrodes, and the external electrode are integrally compressed. According to the present invention, by coupling the electrodes and the ...

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PatentPak Full Text Substances (80) Reactions (0) Citing (0) Citation Map





# 提纲

- 独特的增值内容结合先进的技术
- 创新的数据服务及应用案例
- 规避知识产权风险的独特解决方案
- **综合材料、健康与能源等多学科应用**

# 拓展能源与材料相关应用领域

借助CAS词库提供的技术标准词，快速拓展获取信息的思路

Search CAS Lexicon

Lithium batteries

Search Concept

Multiple preferred terms found, please select one concept to...

- Lithium primary batteries
- Lithium-ion secondary batteries
- Lithium-sulfur secondary batteries

锂电池、太阳能电池、相变材料等

Search CAS Lexicon

Phase change materials

Search Concept

^ Preferred Term

Phase change materials

This will search synonyms: **Materials**, **phase-change**, **Phase change** ag...  
[View more synonyms](#)

^ Broader Terms (1) [Select All](#)

Materials

^ Narrower Terms (1) [Deselect All](#)

Phase change materials, heat-storage phase-change materials

^ Related Terms (1) [Select All](#)

Phase transition

Search CAS Lexicon

solar cell

Multiple preferred terms found, please select one concept to...

- Solar cells
- Tandem solar cells
- Solar cells, cascade
- Thermophotovoltaic solar cells
- Molecular solar cells
- Organic solar cells
- Heterojunction solar cells
- Solar cell concentrators
- Solar cells, bifacial
- Schottky solar cells
- Dye-sensitized solar cells
- Tandem organic solar cells

Select a boolean operator  Add Term(s)

纳米相关的相变材料

Filtering: Concept: 100 Selected

- Nanoparticles
- Carbon nanotubes
- Nanocomposites
- Nanofluids
- Nanostructures
- Nanostructured materials
- Nanofibers
- Nanosheets
- Nanowires
- Nanocapsules

References search for 2 CAS Lexicon Terms

Substances Reactions Citing Knowledge Graph

Filter Behavior: Filter by Exclude

Filtering: Concept: 100 Selected

3,637 Results

Sort: Relevance View: Partial Abstract

^ Document Type

- Journal (2,384)
- Patent (1,164)
- Review (191)
- Conference (41)
- Dissertation (7)

View All

^ Language

- English (2,652)
- Chinese (849)
- Korean (73)
- German (24)
- French (15)

View All

^ Publication Year

1

**Analysis of thermal properties of paraffin/silver nanoparticle CPCM in cylindrical system**

By: Zhang, Runjie; Luo, Bo; Li, Zhongjie; Yang, Guojun; Lin, Yixin; Guocheng Gongcheng Xuebao (2021), 21(11), 1364-1372 | Language: Chinese, Database: CApius

Because of the latent heat of phase change, phase change materials (PCM) are used in thermal management in various fields. As a new energy source, lithium power batteries have been widely used in elec. vehicles in recent years. As an effective passive cooling method, phase change cooling can effectively slow down the heat accumulation of lithium batteries. To apply phase change materials to alleviate the thermal runaway of lithium batteries, a paraffin/silver nanoparticle composite phase change material (PPSPM) cylindrical system was established, and the phase change model and the volume of the...

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Full Text

Substance (1) Reactions (0) Citing (0) Citation Map

2

**Stable solid particulate system for controlling humidity to a selected range**

By: Akers, Jeffrey W., United States, US11590474 B1 2023-02-28 | Language: English, Database: CApius

A stable, solid, externally dry particulate system for controlling humidity to a selected range comprising a hydrophobic silica component and a hydrophilic silica component where the hydrophobic component comprises about 4 to 10 weight % hydrophobic nano silica particles and from about 96 to 90 weight % of a mixture of a saturated solution of at least one soluble solid and undissolved at least one soluble solid, and the hydrophilic micro silica component comprises from about 20 to 40 weight % hydrophilic silica particles and about 80 to 20 weight % of the mixture of the saturated solution of at...

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# 纳米复合材料在葡萄糖分析方法中的应用

## TiO<sub>2</sub>-石墨烯生物传感器

### 方法来源文献

### 操作步骤

#### Analysis of Glucose by Amperometry

CAS MN: 2-114-CAS-104693

Method Category: Biomolecule Isolation Assay

Technique: Amperometry

#### 分析方法所用材料

Materials	Role
Glucose	analyte
Nanoparticles	material
Teflon membrane filter	material
Glassy carbon electrode (GCE)	material
Ag/AgCl electrode	material
Platinum foil	material
TiO <sub>2</sub> -GR/GOD modified GCE	material
Sulfuric acid	reagent
Permanganic acid (HMnO <sub>4</sub> ), potassium salt (1:1)	reagent
Graphite	reagent
Titania	reagent
Perfluoro-3,6-dioxo-4-methyl-7-octenesulfonic acid-tetrafluoroethylene copolymer	reagent
Graphene	reagent
Phosphate	reagent

#### Source

A glucose biosensor based on TiO<sub>2</sub>-Graphene composite

Jang, Hee Dong; Kim, Sun Kyung; Chang, Hankwon; Roh, Ki-Min; Choi, Jeong

Biosensors & Bioelectronics (2012), 38 (1), 184 - 188. Elsevier B.V.

CODEN: BBIOE4 | ISSN: 09565663 | DOI: 10.1016/j.bios.2012.05.033

Full Text

View in CAS SciFinder

#### 标题、摘要

#### Abstract

A novel glucose biosensor was developed based on the adsorption of glucose composite was synthesized from a colloidal mixture of TiO<sub>2</sub> nanoparticles (AASA). The particle morphol. of all TiO<sub>2</sub>-GR composites was spherical in shape and that the degree of encapsulation was proportional to the thickness of the TiO<sub>2</sub>-GR composite was linear against a concentration of about 6.2 μA/mM cm<sup>2</sup>. The as prepared glucose biosensor based on the pure TiO<sub>2</sub> and GR biosensor.

#### Equipment Used

#### 仪器

Electrochemical interface instrument, VSP, Bio-Logics

#### Conditions

#### 实验条件

#### Instrument

supporting electrolyte: 0.01 M phosphate buffer solution (PBS), potential: -0.6 V

#### Instructions

#### Synthesis of graphene oxide (GO) colloid

1. Synthesize graphene oxide (GO) by oxidation of graphite powder using sulfuric acid and potassium permanganate.
2. Mix the micrographic powder with a strong oxidizing agent, filter, wash and dry.
3. Disperse the dry GO in water with mechanical agitation or mild sonication using a tabletop ultrasonic cleaner to obtain a colloidal solution of exfoliated GO.

#### Synthesis of titanium dioxide graphene (TiO<sub>2</sub>-GR) composite

1. Prepare a colloidal mixture solution as a aerosol precursor by dispersing TiO<sub>2</sub> nanoparticle (P25, Degussa) and GO colloid in distilled water.
2. Prepare the precursor with different weight ratios of GO/TiO<sub>2</sub> from 0.05 to 2.0 while the concentration of the TiO<sub>2</sub> at fixed 0.1 wt% in the colloidal mixture.
3. Use the experimental apparatus for aerosol assisted self-assembly (AASA) process consisting of ultrasonic atomizer, electrical tubular furnace and a filter sampler.
4. Use the ultrasonic atomizer to generate micro-sized droplets of the colloidal precursor.
5. Carry the droplets into the furnace at 1.0 L/min flow of argon.
6. Perform the evaporation of water, self-assembly of GO and TiO<sub>2</sub> and reduction of GO in sequence in the tubular furnace (length and diameter of the heating zone 54 cm and 25 mm, respectively).
7. Set the operating temperature at 800 °C.
8. Collect the fabricated TiO<sub>2</sub>-GR composites using a Teflon membrane filter.
9. Heat the filter to prevent water from condensing on it.

#### Preparation of TiO<sub>2</sub>-GR/glucose oxidase (GOD) biosensor

1. Disperse 1 mg of TiO<sub>2</sub>-GR composite in 1 mL of 10,000 ppm (10 mg/mL) GOD solution.
2. Incubate the TiO<sub>2</sub>-GR/GOD colloid at 4 °C for 24 h.
3. Centrifuge using a centrifugal separator at 10,000 rpm for 1 h in order to ensure complete GOD immobilization.
4. Disperse the precipitate with 1 mL of 0.01 M phosphate buffer solution (PBS).
5. Drop 5 μL of TiO<sub>2</sub>-GR/GOD colloid onto the surface of glassy carbon electrode (GCE) and dry at room temperature.
6. Cast 10 μL of 0.05 wt% Nafion solution additionally on the surface of modified GCE.
7. Dry before the electrochemical experiment.

#### Amperometry measurement

1. Analyze the sample using electrochemical interface instrument (VSP, Bio-Logics).
2. Use TiO<sub>2</sub>-GR/GOD modified GCE as working electrode, Ag/AgCl electrode as reference electrode and platinum foil as counter electrode.
3. Use 0.01 M phosphate buffer solution (PBS) as supporting electrolyte.
4. Perform measurement in a cell containing different concentrations of glucose and electrolyte solution.
5. Set the instrumental parameters as follows: potential: -0.6 V, scan rate: 50 mV/s.

#### Validation

Linearity Range	0 - 8 mM
Precision	5.6% (RSD) in 8 mM spiked concentration
Sensitivity	6.2 μA/mM cm <sup>2</sup>

#### 数据有效性

# 纳米复合材料在缓控释药物递送系统中的应用配方

## 负载抗癌药物的羧甲基纤维素/氧化石墨烯复合材料

**Doxorubicin Loaded Carboxymethyl Cellulose/Graphene Oxide Nanocomposite Hydrogel Beads: Controlled-Release Drug Delivery Systems or Anticancer Agents--Controlled Release**

Purpose	Target	Delivery Route	Physical Form	Source
Antitumor agents, Pharmaceutical formulations	doxorubicin	-	Hydrogels	<a href="#">View</a>

**Formulation Ingredients**      **配方成分、功能、用量**      [Expand All Groups](#) | [Collapse All Groups](#)

Component	Function	Amount Reported	Optionality
Group: carboxymethylcellulose/graphene oxide nanocomposite hydrogel bead	-	0.2 g	Mandatory
Graphene	-	5 wt. %	Mandatory
Water	-	20 mL	Mandatory
Sodium carboxymethyl cellulose	-	1 g	Mandatory
Iron chloride (FeCl <sub>3</sub> )	-	-	Mandatory
Group: doxorubicin solution	-	-	Mandatory
Doxorubicin	drug	20 mL	Mandatory
Water	solvent	25 ppm	Mandatory

**More Formulations like this...** NEW      **相似配方**

Doxorubicin Loaded Carboxymethyl Cellulose/Graphene Oxide...  
Purpose: Antitumor agents, Pharmace...  
Target: doxorubicin  
Delivery Route: -  
Physical Form: Hydrogels

Doxorubicin Loaded Carboxymethyl Cellulose/Graphene Oxide...  
Purpose: Antitumor agents, Pharmace...  
Target: doxorubicin  
Delivery Route: -  
Physical Form: Hydrogels

Doxorubicin Loaded Graphene Oxide-Pyrenyl-Polyethylene Glycol Hydrogel: Drug Delivery Systems...  
Purpose: Antitumor agents, Drug deliv...  
Target: doxorubicin, tumor cell prolifer...  
Delivery Route: -  
Physical Form: pharmaceutical hydrog...

Doxorubicin Loaded Magnetic Iron Oxide Based on Poly(Acrylic Acid) Grafted Onto Sodium Alginate...  
Purpose: Drug delivery systems  
Target: doxorubicin  
Delivery Route: -  
Physical Form: pharmaceutical hydrog...

## 配方制备工艺

### Process

preparation of carboxymethylcellulose/graphene oxide nanocomposite hydrogel beads: graphene oxide was exfoliated and dispersed in 20 ml of water by ultrasonication for 20 min afterwards, 1 g carboxymethyl cellulose was dissolved in the prepared graphene oxide aqueous dispersion; the solutions were transferred into a syringe to assist the droplet addition of the above mixture into 0.2 M ferric chloride solution; the beads were allowed to crosslink with ferric ion in solution for 20 min; after that, the beads were filtered and washed with distilled water to remove unreacted ferric chloride on the surface of the beads and dried in 50 °C under vacuum for 24 h.

Loading of carboxymethylcellulose/graphene oxide nanocomposite hydrogel with doxorubicin: 0.2 g of prepared dry bead hydrogels was added to 20 ml of doxorubicin solution (25 ppm in distilled water) under stirring at room temperature for 72 h in dark conditions; excess of doxorubicin was washed using distilled water.

### Experimental Activity

## 配方评估

Descriptor	Notes	Details
cytotoxicity	cytotoxicity of doxorubicin loaded carboxymethyl cellulose/graphene oxide nanocomposite hydrogel against SW480 cells was evaluated and result expressed in terms of cell viability.	Observed loss of cell viability compared to the untreated control cells.

### Source Journal

## 来源文献

[Carboxymethyl cellulose/graphene oxide bio-nanocomposite hydrogel beads as anticancer drug carrier agent](#)

Carbohydrate Polymers  
Language: English  
Location: Article page 2, 6

Full Text ▾

[View in CAS SciFinder®](#)



# 纵览各种材料的组成

## 生物可降解聚合物

Reference Role

- Preparation (2,736)
- Uses (2,555)
- Technical or Engineered Material Use (2,399)
- Industrial Manufacture (2,370)
- Polymer in Formulation (1,917)
- Biological Study (1,481)  
[View All](#)

Commercial Availability

Number of Components

Molecular Weight

Stereochemistry

Element

Substance Class

- Organic/Inorganic Small Molecule (3,984)
- Polymer (1,481)
- Manual Registration (1,336)
- Salt and Compound With (689)
- Protein/Peptide Sequence (416)  
[View All](#)

Isotopes

Metals

Experimental Property

- Melting Point (344)
- Glass Transition Temperature (337)
- Density (176)
- Tensile Strength (161)
- Refractive Index (97)

<p>341K References</p> <p>10K Reactions</p> <p>85 Suppliers</p>	<p>465K References</p> <p>21K Reactions</p> <p>91 Suppliers</p>	<p>306K References</p> <p>7,470 Reactions</p> <p>22 Suppliers</p>
<p>4</p> <p>26023-30-3</p> <p>PLA</p> <p><math>(C_3H_4O_2)_n</math> Poly(lactic acid)</p> <p>62K References</p> <p>4,463 Reactions</p> <p>16 Suppliers</p>	<p>5</p> <p>24980-41-4</p> <p><math>(C_6H_{10}O_2)_x</math> Polycaprolactone</p> <p>47K References</p> <p>1,624 Reactions</p> <p>36 Suppliers</p>	<p>6</p> <p>26247-20-1</p> <p>PBS</p> <p><math>(C_8H_{12}O_4)_n</math> Poly(butylene succinate)</p> <p>9,456 References</p> <p>1,015 Reactions</p> <p>0 Suppliers</p>
<p>7</p> <p>52352-27-9</p> <p><math>(C_4H_8O_3)_x</math> Poly(hydroxybutyrate)</p> <p>4,086 References</p> <p>96 Reactions</p> <p>4 Suppliers</p>	<p>8</p> <p>60961-73-1</p> <p>PBAT</p> <p><math>(C_8H_6O_4, C_6H_{10}O_4, C_4H_4O_2)_x</math> Components: 3 Adipic acid-1,4-butanediol-terephthalic acid copolymer</p> <p>6,446 References</p> <p>518 Reactions</p> <p>1 Supplier</p>	<p>9</p> <p>26100-51-6</p> <p>PLA</p> <p><math>(C_3H_5O_3)_x</math> (±)-Poly(lactic acid)</p> <p>50K References</p> <p>645 Reactions</p> <p>20 Suppliers</p>



# 深入了解材料属性特征

CAS Registry Number: 1317-33-5

References (20) Reactions (1,447) Suppliers (71)

$$\text{S}=\text{Mo}=\text{S}$$

MoS<sub>2</sub>  
Molybdenum disulfide (MoS<sub>2</sub>) (K1, K10, A10)

Key Physical Properties	Value	Condition
Molecular Weight	160.06	-
Melting Point (Experimental)	2375 °C	-
Density (Experimental)	5.06 g/cm <sup>3</sup>	Temp: 15 °C

Experimental Properties | Spectra

Other Names and Identifiers

分子量  
熔点  
密度

化学、密度、电学、电子、界面、磁学、机械、  
光学、结构、热学等性能

Experimental Properties

Property	Value	Condition	Source
Electric Resistivity	750 Ω*cm	-	(1) CAS
Dielectric Constant - 2 Sources	See Full Text	-	(2-3) CAS
Dielectric Loss - 2 Sources	See Full Text	-	(4-5) CAS
Electric Conductance and Electric Resistance - 20 Sources	See Full Text	-	(6-25) CAS
Electric Current-Potential Curve - 20 Sources	See Full Text	-	(26-45) CAS
Piezoelectric Coefficient - 1 Source	See Full Text	-	(46) CAS
Superconductivity - 1 Source	See Full Text	-	(47) CAS

Sources

(1) Rakowski, Wieslaw A.; Composites, Part B: Engineering, (2005), 37B(2-3), 81-88, CAplus  
 (2) Reshak, Ali Hussain; Physical Review B: Condensed Matter and Materials Physics, (2003), 68(12), 125101/1-125101/7, CAplus  
 (3) Ahmad, Muchtar; Journal of Applied Physics (Melville, NY, United States), (2013), 114(4), 042310/1-042310/5, CAplus

核磁氢谱、红外、质谱、拉曼、红外可见、X-Ray等

Experimental Spectra

Hetero NMR IR Mass Raman UV and Visible X-Ray Additional Spectra

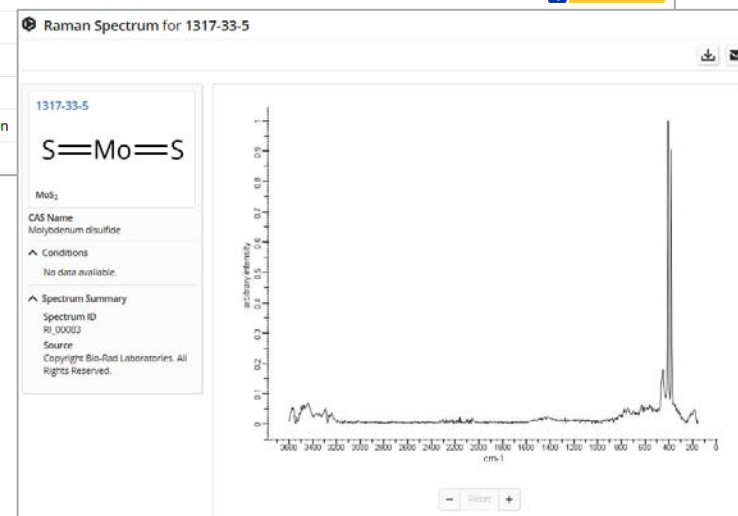
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View Raman Spectrum	(1) BIORAD
Raman Spectrum - 166 Sources	(2-167) CAS

Sources

(1) Copyright Bio-Rad Laboratories. All Rights Reserved.  
 (2) Carmalt, Claire J.; Polyhedron, (2003), 22(9), 1255-1262, CAplus  
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Structure Activity Relationships CAS LIFE SCIENCES  
 Absorption, Distribution, Metabolism, and Excretion Data CAS LIFE SCIENCES  
 Toxicity CAS LIFE SCIENCES



# 含氟聚合物能源材料及制备

Number of Components

Molecular Weight

Stereochemistry

Element

- C (2,889)
- H (2,882)
- O (2,570)
- N (1,029)
- S (355)
- F (351)

View All

Substance Class

- Organic/Inorganic Small Molecule (3,296)
- Salt and Compound With (1,365)
- Coordination Compound (1,099)
- Polymer (351)
- Tabular Inorganic (221)

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Isotopes

Metals

25067-11-2

$(C_3F_6, C_2F_4)_x$   
Components: 2  
Hexafluoropropylene-tetrafluoroethylene copolymer

13K References | 158 Reactions | 1 Supplier

25038-71-5

$(C_2H_4, C_2F_4)_x$   
Components: 2  
Ethylene-tetrafluoroethylene copolymer

9,938 References | 218 Reactions | 7 Suppliers

CAS Reaction Number: 31-614-CAS-29173964

Suppliers (33) | Suppliers (8) | Supplier (1)

Reaction Overview

Steps: 1 Yield: -

Step 1

Stage	Reagents	Catalysts
1	1-Butanesulfonic acid, 3,3,4,4-tetrafluoro-4-(1,1,2,2,3,3,3-heptafluoropropoxy)-, sodium salt (1:1)	Disodium phosphate Ammonium persulfate

PATENT

Fluoroalkyl ether sulfonate surfactants, dispersion polymerization of fluorinated olefin monomer and altering the surface behavior of a liquid

By: Peng, Sheng; et al  
View All  
World Intellectual Property Organization

PatentPak | Full Text

Patent Number: WO2010056699  
Publication Date: 2010-05-20  
Application Number: WO2009-US63966  
Application Date: 2009-11-11  
Kind Code: A1  
Assignee: E.I. du Pont de Nemours and Company, United States

Experimental Protocols

Synthetic Methods | Experimental Procedure

Products: [Hexafluoropropylene-tetrafluoroethylene copolymer](#)

Reactants: [Tetrafluoroethylene](#), [Hexafluoropropylene](#)

Reagents: [1-Butanesulfonic acid, 3,3,4,4-tetrafluoro-4-\(1,1,2,2,3,3,3-heptafluoropropoxy\)-, sodium salt \(1:1\)](#)

Catalysts: [Disodium phosphate](#), [Ammonium persulfate](#)

Solvents: [Water](#)

Procedure

- Charge 1 L stainless reactor with distilled water (450 mL),  $C_3F_7OCF_2CF_2CH_2CH_2SO_3Na$  (3.0 g), disodium hydrogen phosphate (0.4 g) and ammonium persulfate (0.4 g), followed by introducing tetrafluoroethylene (TFE) (40 g) and hexafluoropropylene (HFP) (140g).
- Heat the reactor at 70°C for eight hours under agitation.
- Unload the polymer emulsion from the reactor coagulated with saturated  $MgSO_4$  aqueous solution.
- Collect the polymer precipitate by filtration.
- Wash the precipitate with warm water (70°C) several times.
- Dry the precipitate in vacuo oven (100 mmHg, 13300 Pa) at 100°C for 24 hours to obtain the product.

Scale: gram

Characterization Data

Hexafluoropropylene-tetrafluoroethylene copolymer

Fluorine-19 NMR	(mol%): HFP/TFE (14.4/85.6)
Melting Point	-260.72 °C

CAS Method Number 3-614-CAS-2680671

Reaction Notes

Stainless reactor used

详细的材料制备与表征等信息

# 总结：

- CAS内容合集来源于化学并超越于化学，支持多学科、跨学科研发创新
- 全面覆盖的内容确保不遗漏任何重要的信息
- 独特的增值内容与强大的功能提升研发创新的效率
- CAS科学家标引的高质量数据集为极难突破的科学领域开辟了道路
- CAS科学家人工智慧与先进专有技术结合标引的数据，能够揭示隐藏在数据间的隐秘关联，促进对前沿研究的洞察和对未来发展趋势的前瞻

Between problems  
and progress **are**  
**connections that**  
**matter**

谢谢!

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