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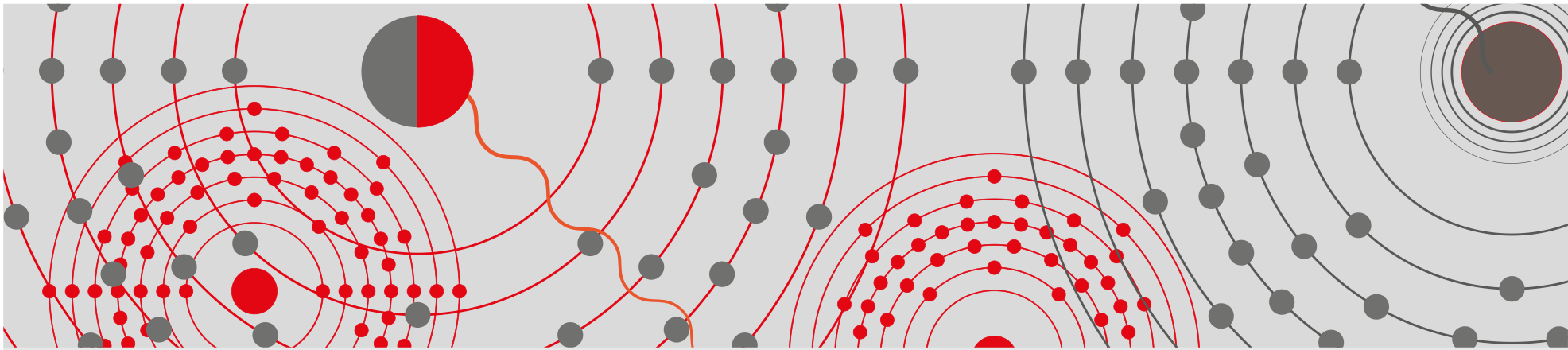

Nature Nano如何帮助您在高影响力期刊发表文章

William Chiuman PhD

Director, Product Management

nature research

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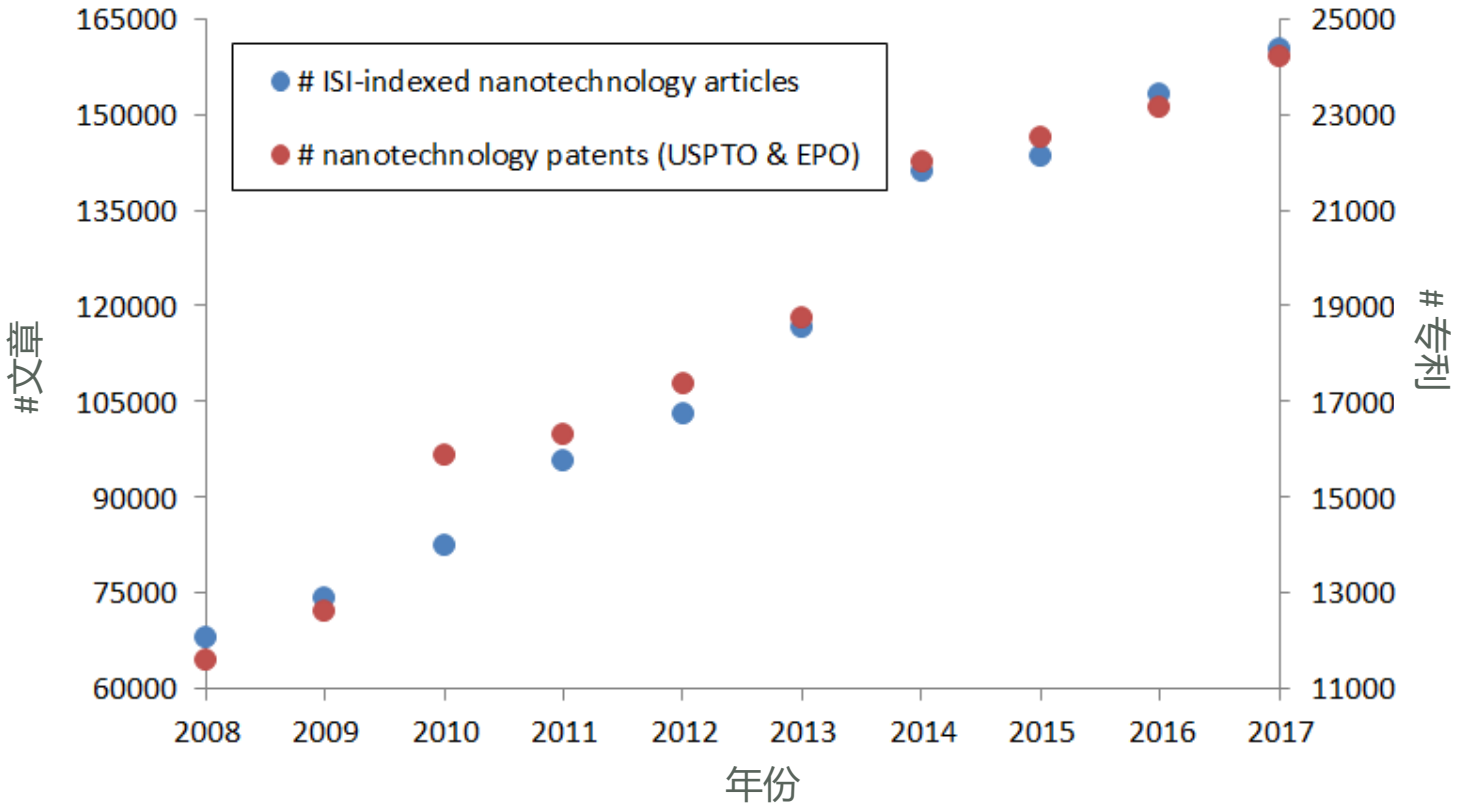
纳米科学技术—飞速发展的科研领域



Source: statnano.com

- **海量的信息和数据分散在各种期刊和专利之中，为了有效的管理和高效的沟通，亟需对信息进行甄别，分类以及索引。**
- **对于“纳米材料”，目前并没有一个标准的术语命名。**

科研工作流程

建立科学问题
提出假设
设计实验
获取实验数据
结果分析讨论
撰写文章、专利
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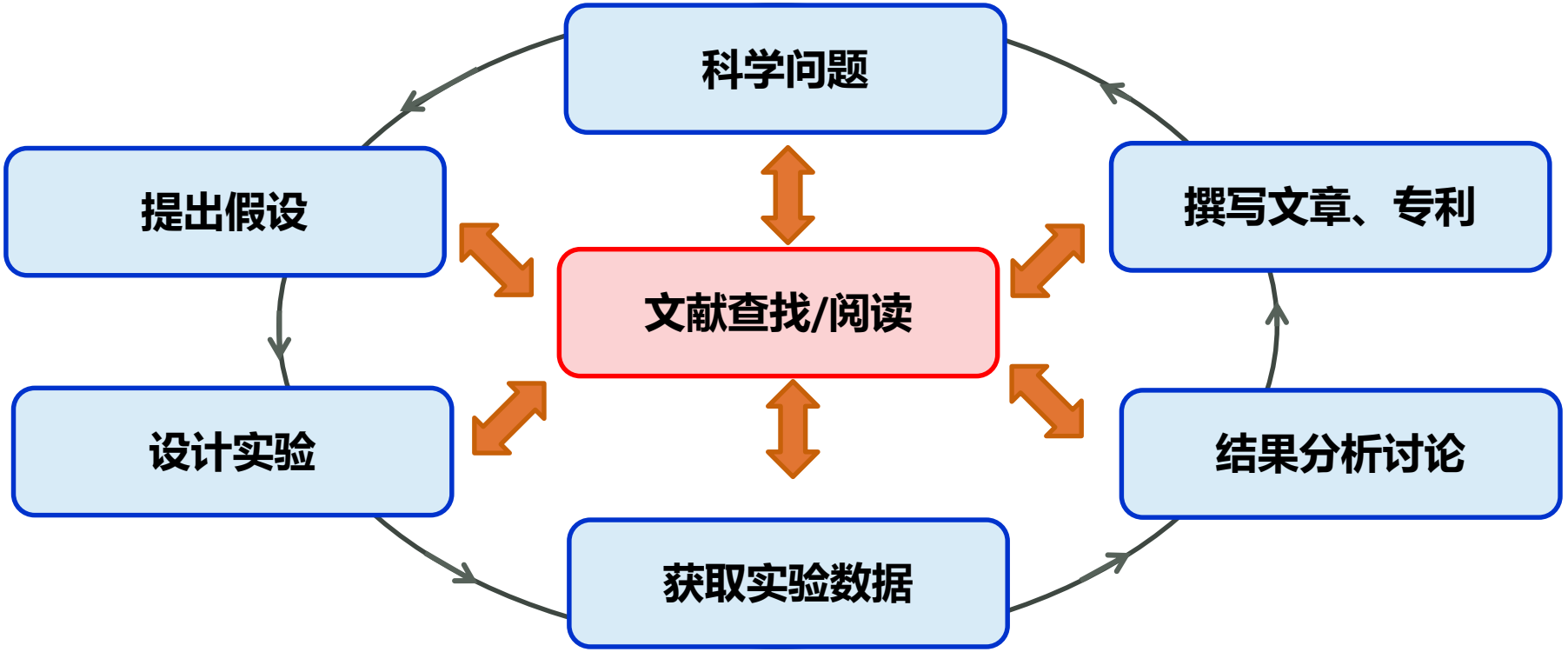
科学问题
提出假设
撰写文章、专利
文献查找/阅读
设计实验
结果分析讨论
获取实验数据

纳米领域科研人员面临的搜索难题

1. **命中率低：** 搜索结果大量不相关
2. **步骤繁琐：** 确认相关性需要进入到原文
3. **来源分散：** 相同或相似的纳米材料/器件信息分散在不同期刊
4. **缺少汇总：** 针对某些确定性能或特殊应用的纳米材料没有统一汇总表
5. **合成步骤缺少简介：** 纳米材料的合成方法和步骤的描述信息量大，阅读耗时、难以辨别与比较

一站式检索，利用机器学习过滤纳米科技相关文献

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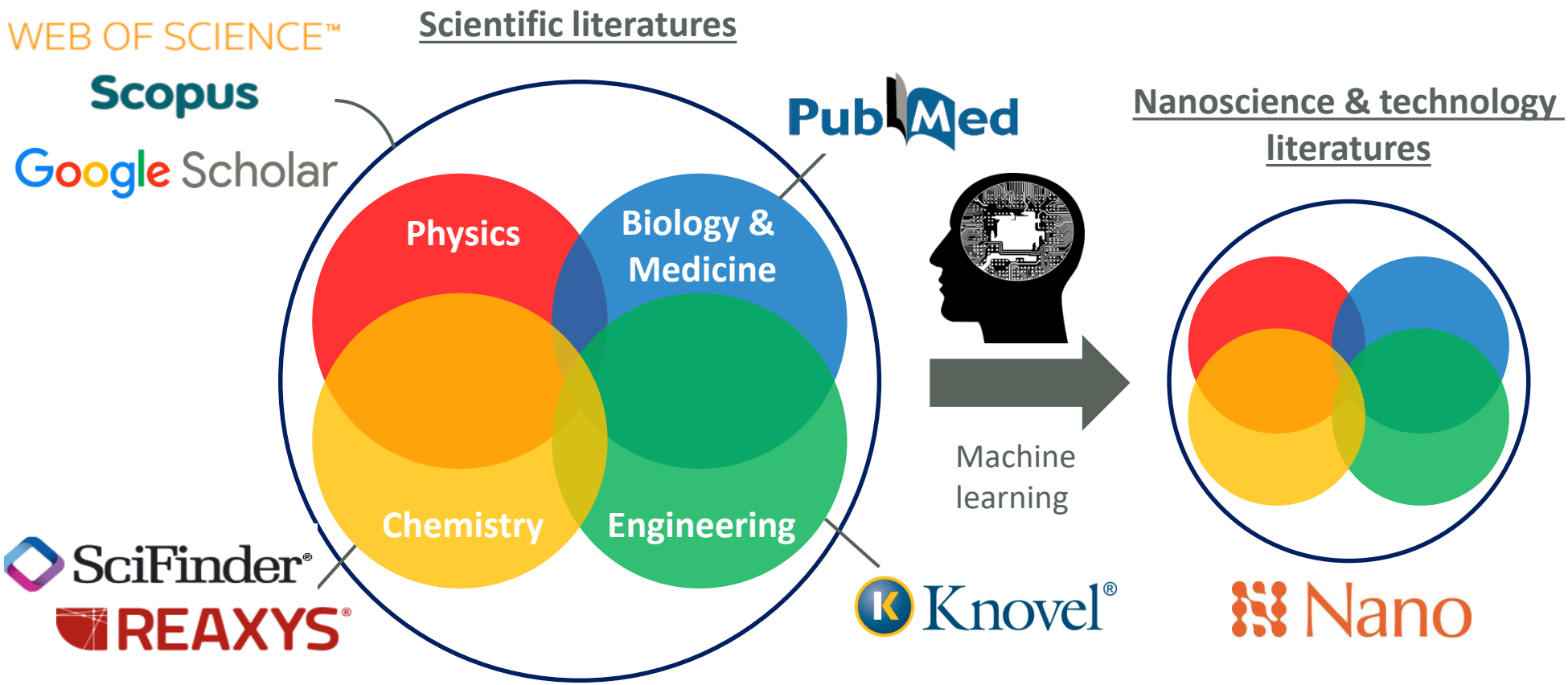

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- *Nanomedicine: Nanotechnology, Biology and Medicine*, Elsevier
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- *Nanoscale*, RSC
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- *Nature*, Nature Research
- *Nature Materials*, Nature Research
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Others

The Light-Induced Field-Effect **Solar Cell** Concept–Perovskite Nanoparticle Coating Introduces Polarization Enhancing Silicon Cell Efficiency

Y Wang, Z Xia, L Liu, W Xu, Z Yuan, Y Zhang... - **Advanced** ..., 2017 - Wiley Online Library

Abstract **Solar cell** generates electrical energy from light one via pulling excited carrier away under built-in asymmetry. Doped semiconductor with antireflection layer is general strategy to achieve this including crystalline silicon (c-Si) **solar cell**. However, loss of extra energy

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The Light-Induced Field-Effect Solar Cell Concept – Perovskite Nanoparticle Coating Introduces Polarization Enhancing Silicon Cell Efficiency

Yusheng Wang | Zhouhui Xia | Lijia Liu ... in **Advanced Materials** (2017)

Solar cell generates electrical energy from light one via pulling excited carrier away under built-in asymmetry. Doped semiconductor with antireflection layer is general strategy to achieve this including... more

This article discusses: Solar Cell with Perovskite NPs, Power Conversion Efficiency, PSS, c-Si Solar Cell, Sunlight

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metal oxide nanoparticles × adsorption

O2 adsorption dependent photoluminescence emission from metal oxide nanoparticles

Amir R. Gheisi | Chris Neygandhi | Andreas K. Sternig ... in **Physical Chemistry Chemical Physics** (2014)

Optical properties of metal oxide nanoparticles are subject to synthesis related defects and impurities. Using photoluminescence spectroscopy and UV diffuse reflectance in conjunction with Auger electron... more

This article discusses: Adsorption with Photoluminescence, Surface, Nanoparticles, Oxygen, MgO Nanoparticles and Metal Oxide Nanoparticles with Photoluminescence, Surface, Annealing, Particle, Oxide Nanoparticle System

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O2 adsorption dependent photoluminescence emission from metal oxide nanoparticles

Amir R. Gheisi | Chris Neygandhi | Andreas K. Sternig ... in **Physical Chemistry Chemical Physics** (2014)

Optical properties of metal oxide nanoparticles are subject to synthesis related defects and impurities. Using photoluminescence spectroscopy and UV diffuse reflectance in conjunction with Auger electron... more

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5. **合成步骤缺少简介：** 纳米材料的合成方法和步骤的描述信息量大，阅读耗时、难以辨别与比较

实例1—普通检索

nanosheets and electrical conductivity

Articles

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Since 2013
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Synthesis of graphene-based **nanosheets** via chemical reduction of exfoliated graphite oxide
S Stankovich, DA Dikin, RD Piner, KA Kohlhaas… - carbon, 2007 - Elsevier
... Synthesis of graphene-based **nanosheets** via chemical reduction of exfoliated graphite oxide. ... By nature, GO is **electrically** insulating (see below) and thus cannot be used, without further ... Notably, it has been demonstrated that the **electrical conductivity** of GO (and presumably its ...
Cited by 8840 Related articles All 20 versions

Processable aqueous dispersions of graphene **nanosheets**
D Li, MB Müller, S Gilje, RB Kaner… - Nature nanotechnology, 2008 - nature.com
... work may lead to the development of a new generation of antistatic coatings that can combine **electrical conductivity** with transparency ... Synthesis of graphene-based **nanosheets** via chemical reduction of exfoliated graphite oxide. ... **Electric** field effect in atomically thin carbon films. ...
Cited by 6272 Related articles All 15 versions

Preparation and **electrical properties** of graphene **nanosheet**/Al 2 O 3 composites
Y Fan, L Wang, J Li, J Li, S Sun, F Chen, L Chen… - Carbon, 2010 - Elsevier
Fully dense graphene **nanosheet** (GNS)/Al2O3 composites with homogeneously distributed GNSs of thicknesses ranging from 2.5 to 20nm have been fabricated from ball milled expanded graphite and Al2O3 by spark plasma sintering. The percolation threshold of
Cited by 227 Related articles All 8 versions

Two-dimensional **nanosheets** produced by liquid exfoliation of layered materials
JN Coleman, M Lotya, A O'Neill, SD Bergin… - …, 2011 - science.sciencemag.org
... Tae Kim. School of **Electrical** Engineering, Korea University, Seoul, South Korea. ... 1 Optical characterization of **nanosheet** dispersions. ... We performed transmission electron microscopy (TEM) analysis on our dispersions, typically observing 2D flakes consisting of thin **nanosheets**. ...
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Comparison of **electrical properties** between multi-walled carbon nanotube and graphene **nanosheet**/high density polyethylene composites with a segregated network …
J Du, L Zhao, Y Zeng, L Zhang, F Li, P Liu, C Liu - Carbon, 2011 - Elsevier
Multi-walled carbon nanotube (MWCNT)/high density polyethylene (HDPE) and graphene **nanosheets** (GNS)/HDPE composites with a segregated network structure were prepared by alcohol-assisted dispersion and hot-pressing. Instead of uniform dispersion in polymer
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- 所有的信息都是针对于相同的事吗？
- 如果不是，它们有什么不同？
- 哪儿我能找到概览以便我能够快速精确切入而不是读完这所有的？

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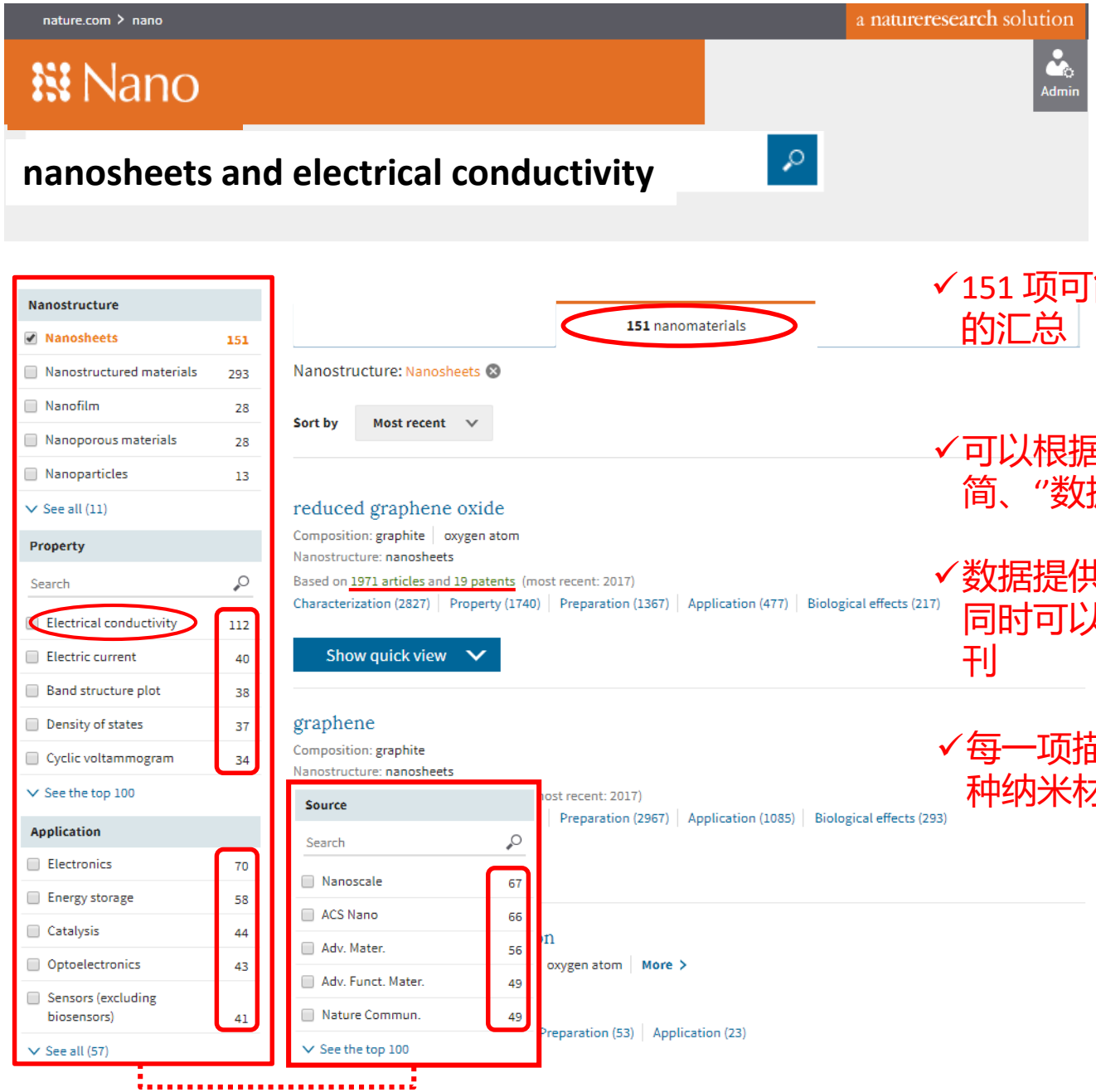

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nanosheets and electrical conductivity

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Nanostructure

- Nanosheets 151
- Nanostructured materials 293
- Nanofilm 28
- Nanoporous materials 28
- Nanoparticles 13

See all (11)

Size

0 – 50000 nm

Update results

Property

Search

- Electrical conductivity 112
- Electric current 40
- Band structure plot 38
- Density of states 37
- Cyclic voltammogram 34

See the top 100

0 articles

Nanostructure: Nanosheets

Sort by Most recent

reduced graphene oxide

Composition: graphite | oxygen atom

Nanostructure: nanosheets

Based on 1971 articles and 19 patents (most recent

Characterization (2827) | Property (1740) | Prepar

Show quick view

graphene

Composition: graphite

Nanostructure: nanosheets

Based on 4222 articles and 134 patents (most recen

Characterization (5542) | Property (4578) | Prepar

Show quick view

nanosheets assembled carbon

Composition: graphite | nitrogen atom | oxygen a

Nanostructure: nanosheets

Based on 38 articles (most recent: 2017)

Characterization (161) | Property (68) | Preparatio

Properties | Applications | Characterization | Biological effects | Preparation | References

具体数值

样品具体参数

Property	Value	Nanomateri Variant	Source
electrical conductivity	250 S/m	Thickness: 0.8 nm Medium/Support: none	Experiment in Liu, Haiqing et al., Adv. Funct. Mater., 2017
	5440 S/m	Thickness: ~ 1070 nm Medium/Support: none	Experiment in Jisoo Park et al., Nanoscale, 2017
	0.0043 S/m	Size: not specified Medium/Support: none	Experiment in L. G. Guex et al., Nanoscale, 2017
	1500 S/m	Size: not specified Medium/Support: none	Experiment in L. G. Guex et al., Nanoscale, 2017
	89 S/cm [8900 S/m]	Size: not specified Medium/Support: none	Experiment in Shuwen Luo et al., Nanoscale, 2017
	75 S/m	Size: not specified Medium/Support: none	Experiment in L. G. Guex et al., Nanoscale, 2017
	120000 S/m	Lateral size: ~ 740 nm Thickness: ~ 232 nm Medium/Support: none	Experiment in Jisoo Park et al., Nanoscale, 2017
	2.27 S/cm [227 S/m]	RMS roughness: 1.2 nm Medium/Support: none	Experiment in Jung, Chan-Hee et al., Nano Energy, 2017

案例2— 特定检索

discharge capacity of lithium iron phosphate nanoparticles

Articles　About 20,800 results (0.11 sec)

Fabricating genetically engineered high-power **lithium-ion** batteries using multiple virus genes

YJ Lee, H Yi, WJ Kim, K Kang, DS Yun… - …, 2009 - science.sciencemag.org

… Lithium-ion battery electrodes store and release electrical energy by insertion and extraction of Li + ions and electrons **…** has been constrained due to kinetic limitations, which result in poor charge- and **discharge**-rate capability and fading of **capacity** upon prolonged **…**

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不确定

可能

不确定

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discharge capacity of lithium iron phosphate nanoparticles

Nanostructure

- Nanostructured materials 14
- Nanoporous materials 5
- Nanoparticles 2

Property

Search

- Discharge capacity 24
- Nyquist plot 10
- Cyclic voltammogram 10
- Voltage 10
- Potential 9

See all (44)

Application

- Energy storage 14
- Electrodes/electrolytes 12
- Power generation 1

Source

Search

- U.S. Patent and

364 articles | **24** nanomaterials | **1** patents

Sort by Relevance

Properties | Applications | Characterization | Biological effects | Preparation | References

$LiFePO_4$ nanoparticles

Composition: lithium iron phosphate

Nanostructure: nanoparticles

Based on 54 articles and 8 patents (most rec

Characterization (78) | Preparation (43) |

Hide quick view

Properties (22)

Discharge capacity
Value: Details in source
Source: Xia, Yang *et al.*, J. Power Source

Discharge capacity
Value: Details in source
Source: Gong, Huaxu *et al.*, Mater. Lett.

Property	Value	Nanomaterial Variant	Source
capacity dependent on charge/discharge	Details in source	Length: ~ 100 nm Length: ~ 2000 nm Width: ~ 1000 nm Width: ~ 50 nm Medium/Support: none	Experiment in Xia, Yang et al., J. Pow Sources, 2011
discharge capability	Details in source	Length: ~ 100 nm Length: ~ 2000 nm Width: ~ 1000 nm Width: ~ 50 nm Medium/Support: none	Experiment in Xia, Yang et al., J. Power Sources, 2011
discharge capacity	Details in source	Size: 100 - 200 nm Medium/Support: none	Experiment in Gong, Huaxu et al., Mater. Lett., 2012
	Details in source	Length: ~ 100 nm Length: ~ 2000 nm Width: ~ 1000 nm Width: ~ 50 nm Medium/Support: none	Experiment in Xia, Yang et al., J. Power Sources, 2011
lithium concentration dependent on discharge rate	Details in source	Radius: 20 - 50 nm Medium/Support: none	Calculation in Siddique, N.A. et al., J. Power Sources, 2014

用户可以直接进入文献，或者了解汇总里同一纳米材料的性能和制备等信息

快速浏览来自多篇文献的纳米材料汇总实例-性质

gold nanoparticles

Composition: gold

Nanostructure: nanoparticles

Based on 3710 articles and 113 patents (most recent: 2017)

Characterization (3432) | Preparation (2451) | Property (1871) | Application (871) | Biological effects (724)

Properties

Search for a property

General physical and chemical properties

Property	Value	Nanomaterial Variant	Source
1,4-aminothiophenol detection analytical enhancement factor	Details in source	Size: 30 - 60 nm Tip size: 20 nm Medium: water Support: none	Experiment in Boris Khlebtsov et al., J. Nanopart. Res., 2014
1,4-aminothiophenol detection limit	Details in source	Core size: 100 nm Size: 130 - 170 nm Tip size: 30 nm Medium: water Support: none	Experiment in Boris Khlebtsov et al., J. Nanopart. Res., 2014
100/111 surface energy ratio	Details in source	Size: 1 - 2 nm Medium/Support: none	Calculation in Almora-Barrios, Neyvis et al., Nano Lett., 2014
110/111 surface energy ratio	Details in source	Size: 1 - 2 nm Medium/Support: none	Calculation in Almora-Barrios, Neyvis et al., Nano Lett., 2014
absorbance	Details in source	Diameter: ~ 15.11 - 29.67 nm Medium: water Support: none	Experiment in Duy, Janice et al., J. Nanopart. Res., 2010

快速浏览来自多篇文献的纳米材料汇总实例-应用

gold nanoparticles

Composition: gold

Nanostructure: nanoparticles

Based on 3710 articles and 113 patents (most recent: 2017)

Characterization (3432) | Preparation (2451) | Property (1871) | Application (871) | Biological effects (724)

Applications

Search for an application area

Area	Application	Nanomaterial Variant	Source
agrochemicals	Gloriosa superba seed germination	Size: 5 - 50 nm Medium: Terminalia arjuna extract Support: none	Confirmed in K. Gopinath et al., J. Nanostruct. Chem., 2014
analysis methods	substrate for surface-enhanced Raman scattering (SERS)	Diameter: 39.5 - 75.5 nm Medium/Support: none	Confirmed in Tian, Shu et al., Nano Lett., 2017
catalysis	interfacial catalytic reactions	Core diameter: 65 nm Diameter: ~ 75 nm Spine bottom diameter: 15 nm Spine length: 5 nm Spine top diameter: 5 nm Medium/Support: none	Confirmed in Dan Wang et al., Nanoscale, 2017
coatings	plasmonic substrate	Diameter: 20 - 40 nm Interparticle distance: 5 - 10 nm Medium/Support: none	Confirmed in Lin, Linhan et al., ACS Nano, 2016
cosmetics/sunscreens/lotions	cosmetology	Size: not specified Medium: hydrogen chloride aqueous solution Support: none	Proposed in Anna Dzimitrowicz et al., J. Nanopart. Res., 2015

快速浏览来自多篇文献的纳米材料汇总实例-表征手段

gold nanoparticles

Composition: gold

Nanostructure: nanoparticles

Based on 3710 articles and 113 patents (most recent: 2017)

Characterization (3432) | Preparation (2451) | Property (1871) | Application (871) | Biological effects (724)

Characterization

Search for a method

Method	Nanomaterial Variant	Source
alternating current	Diameter: ~ 20 nm Medium/Support: none	Experiment in Johannes Walter et al., Nanoscale, 2015
Analytical centrifugation	Diameter: ~ 20 nm Medium/Support: none	Experiment in Johannes Walter et al., Nanoscale, 2015
atomic absorption spectroscopy	Radius: 5 nm Medium/Support: none	Calculation in Yu Luo et al., Proc. Natl. Acad. Sci. USA, 2014
atomic force microscopy	Size: ~ 20 nm Medium/Support: none	Experiment in Satish K. Tuteja et al., Nanoscale, 2017
cathodoluminescence spectroscopy	Edge: 50 nm Thickness: 50 nm Medium/Support: none	Calculation in Losquin, Arthur et al., Nano Lett., 2015

快速浏览来自多篇文献的纳米材料汇总实例-毒性和生物效应

gold nanoparticles

Composition: gold

Nanostructure: nanoparticles

Based on 3710 articles and 113 patents (most recent: 2017)

Characterization (3432) | Preparation (2451) | Property (1871) | Application (871) | Biological effects (724)

Biological effects

Search for a biological system

Biological system	Test details	Nanomaterial Variant	Source
3-D mouse kidney proximal tubule culture	nontoxic	Size: not specified Medium/Support: none	Astashkina, Anna I. et al., Biomaterials, 2014
3T3-L1 cells	noncytotoxic	Diameter: 25 nm Medium/Support: none	Park, Hyejin et al., Biomaterials, 2014
4T1 cells	noncytotoxic	Diameter: 80 nm Medium/Support: none	Liu, Zhen et al., Biomaterials, 2014
4T1 tumor-bearing athymic female BALB/c nude mouse	no effect on body weight, intravenous (iv)	Size: not specified Medium/Support: none	Du, Yang et al., Adv. Mater., 2016
4T1-fLuc tumor cells	cytotoxic upon NIR laser irradiation	Size: not specified Medium/Support: none	Du, Yang et al., Adv. Mater., 2016

快速浏览来自多篇文献的纳米材料汇总实例-制备方法

gold nanoparticles

Composition: gold

Nanostructure: nanoparticles

Based on 3710 articles and 11

Characterization (3432) | Pre

4.2. Synthesis of gold nanoparticles

AuNPs (20 ± 3 nm; Fig. S12B†) were prepared with the sodium citrate method.[43,48] $HAuCl_4$ (1.25 mL, 4 g L^{-1}) was added into 48.75 mL of ultrapure water with vigorous stirring, and boiled at a high temperature (350 °C). After several minutes, freshly prepared aqueous trisodium citrate solution (1.2 mL, 10 mg mL^{-1}) was added rapidly. After the color of the solution had stabilized, the reaction solution was cooled to room temperature and then stored at 4 °C.

Preparation

Type: Chemical synthesis **Source:** Aihua Qu et al., Nanoscale, 2017

Starting materials	Vigorous stirring		Cooling	Product
	1	2	3	
water + gold trichloride hydrochloride	• 350 °C	• trisodium citrate • water solution • rapid adding		**gold nanoparticles** Hydrodynamic diameter: 25.9 - 30.1 nm Medium: water Support: none

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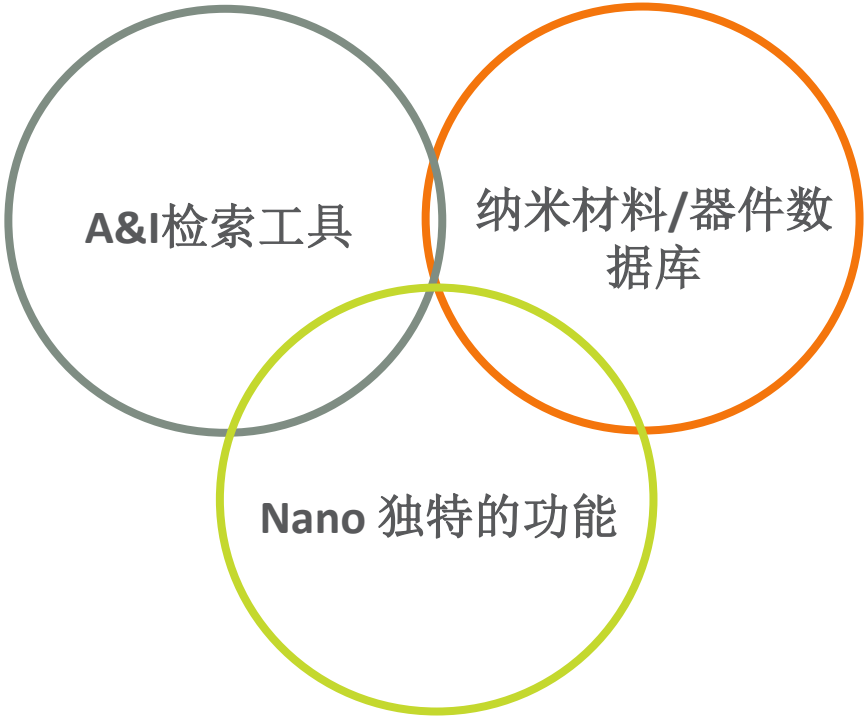

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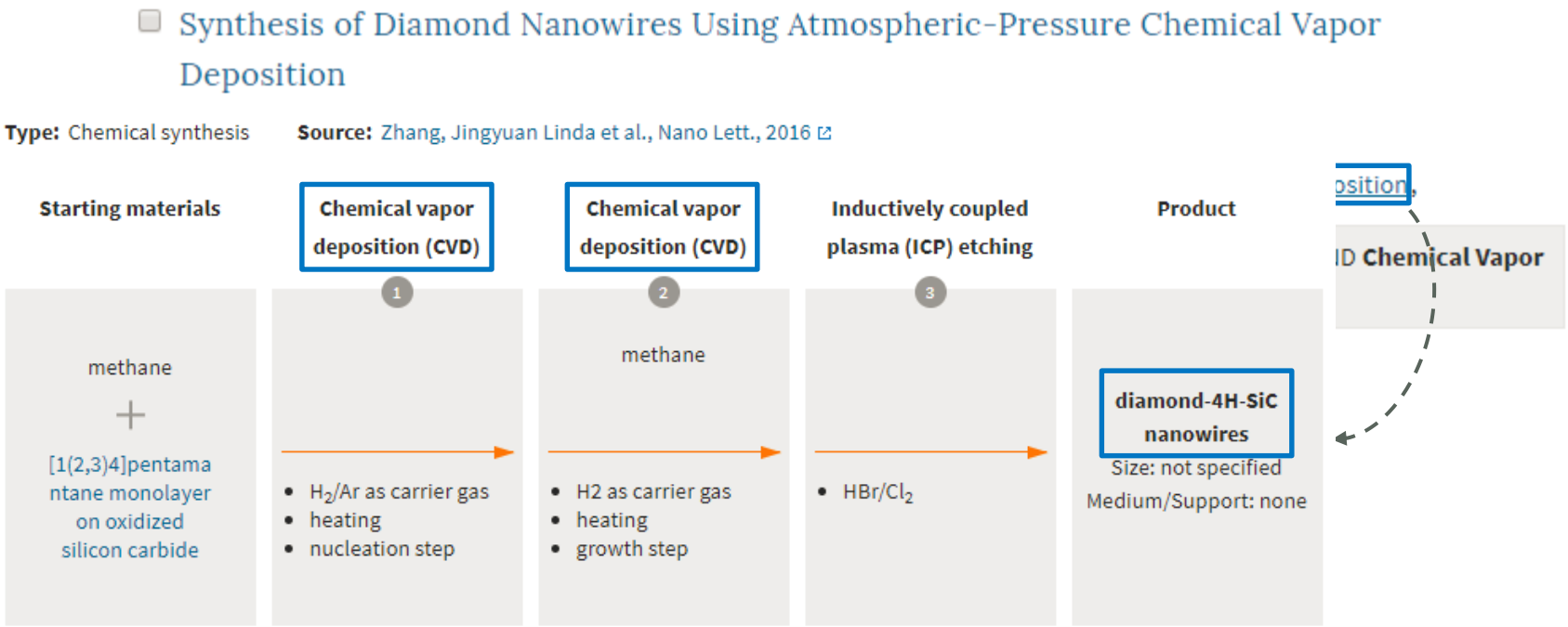

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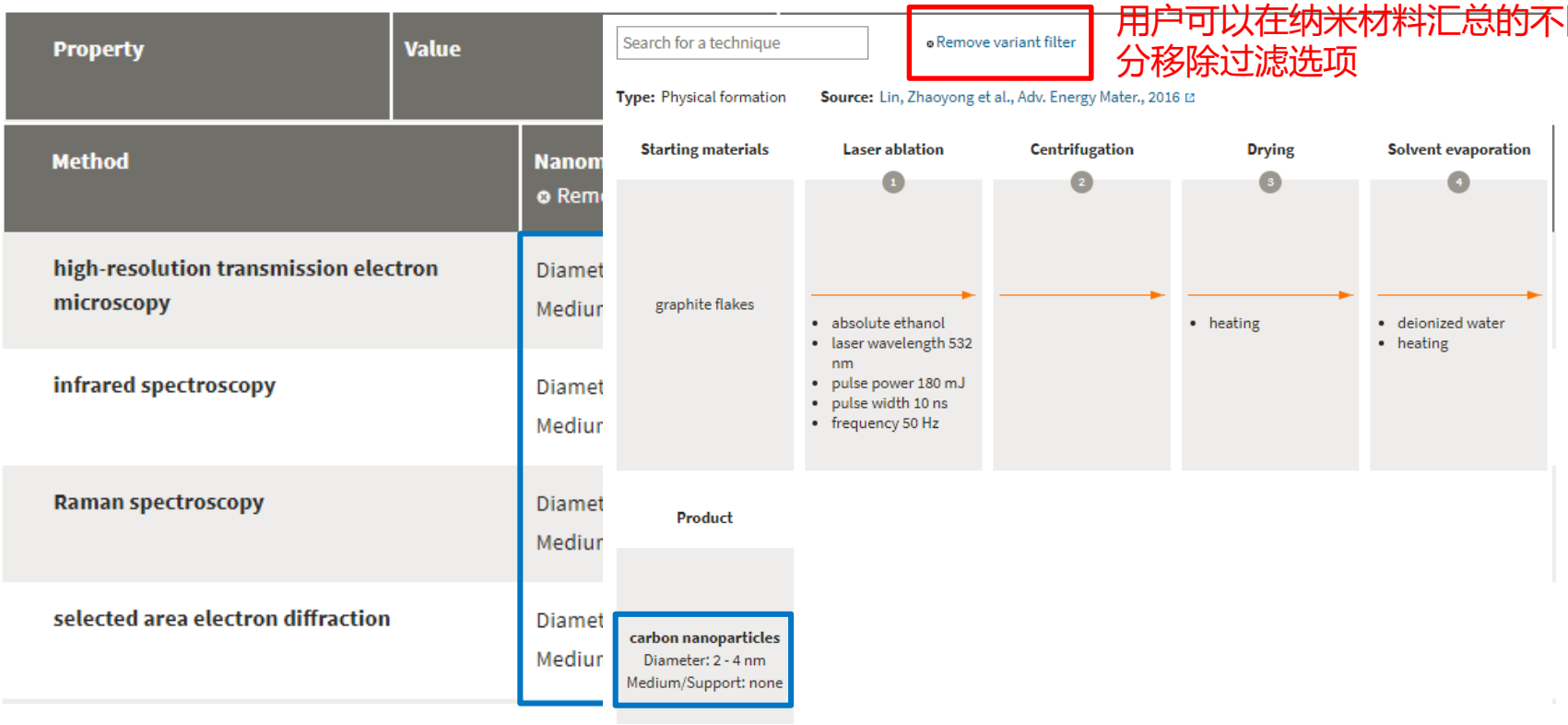

To watch a quick video demo of this feature, open this URL in **Chrome**:
https://www.useloom.com/share/7386dc931e8847ae860f18f4725f88a1

Nano通过用户验证-----可靠的纳米搜索平台

- 基于218个网上访问对象和28位深入电话采访的早期市场调研结果，我们得到一致的反馈“纳米科学研究亟需一款专注于该领域的检索工具”，这让我们坚信启动了Nano项目有重大意义。
- 我们已经展开了多轮用户体验测试，来验证平台功能有效性和实用性，以确保Nano真正地为用户创造价值。与用户的互动从未止步……

到目前为止，已有122 位分布全球的纳米科研者参与用户测试。

Nano顾问委员会（更多在加入）

Jens Kroeger, PhD
Chief Technology Officer
NanoIntegris

Juan Hinestroza, PhD
Assoc. Prof.
Cornell U.

Yanlin Song, PhD
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Inst. Chem., CAS

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NCNST, CAS

Harald Krug, PhD
Prof.
Swiss Federal Lab for
Mat. Sci. and Tech.

Kuei-Hsien Chen, PhD
Distinguished Research Fellow
& Director
IAMS, Academia Sinica

中国纳米科学与技术发展状况概览

施普林格•自然集团、国家纳米科学中心、中国科学院文献情报中心共同合作，编制了中国纳米白皮书，从高水平文献发表、专利申请、重点发展领域分布、国际合作网络等视角，运用大数据分析和可视化方法，综合专家解读和意见，科学详实地揭示出近年来中国和世界纳米科技的发展态势。文章定性分析与定量分析相结合，主观判断与客观数据相印证。该报告，一方面，让我们看到了过去二十年，纳米科技在世界范围得到了很大的发展，对人类社会生活进步产生了巨大影响；另一方面，我们也看到相关领域的变迁和影响。

——白春礼

https://www.nature.com/press_releases/small_science_in_big_china_-_ch.pdf

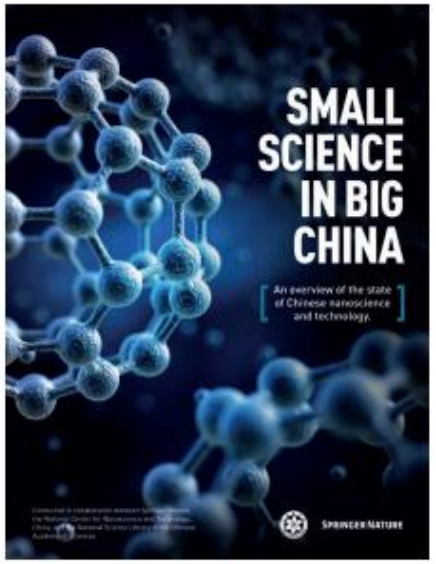
editorial

The power of the tiniest shoot

The publication of a white paper on nanoscience in China sets the scene for the country's future in the field.

Nature Nanotechnology **12**, 833 (2017)

https://www.nature.com/press_releases/small_science_in_big_china_-_en.pdf



谢谢！

更多信息，请访问: nano.nature.com.

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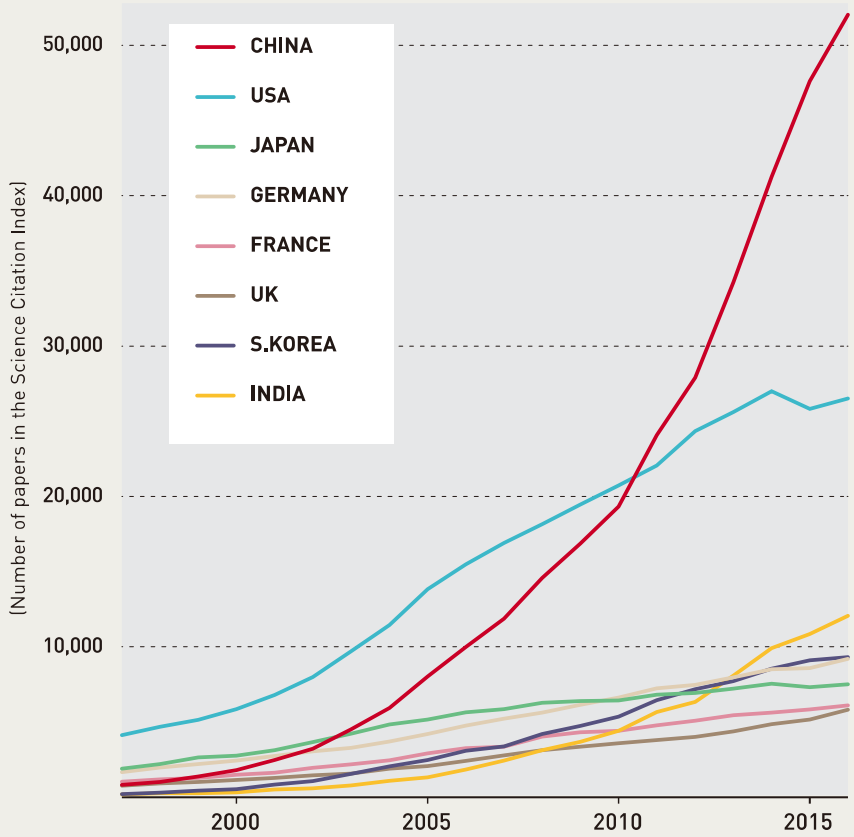
中国纳米科技发展概览

中国纳米科研已经位居全球第一

FIGURE 1 | GROWTH OF NANOSCIENCE.

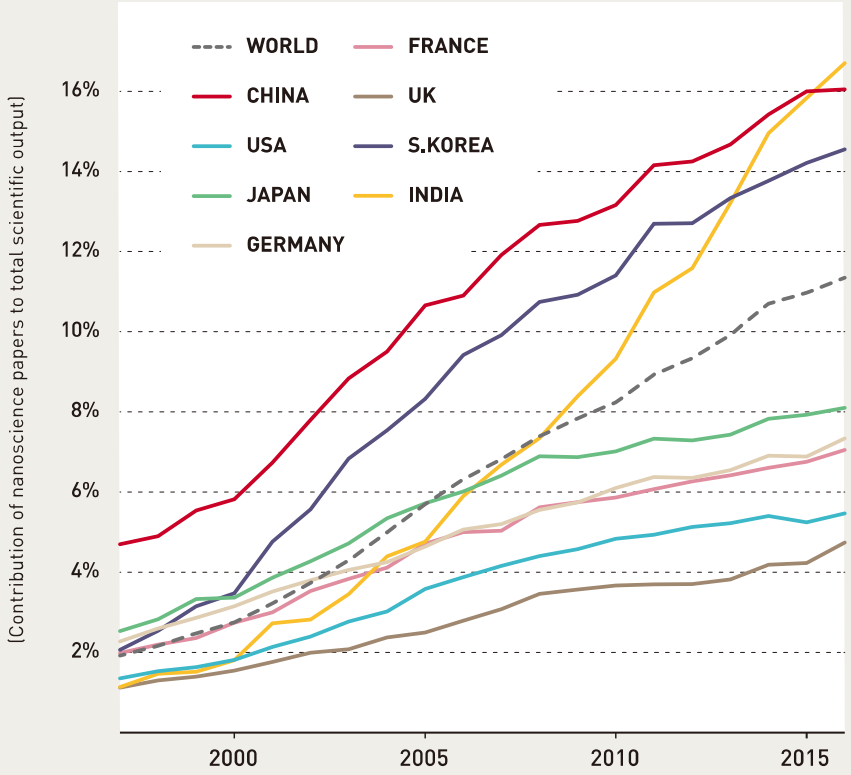
The total output of papers related to nanoscience and technology published in journals listed in the SCI has been growing for the past two decades.



占所有科研领域的比例>16%

FIGURE 2 | CONTRIBUTION OF NANOSCIENCE TO TOTAL SCIENTIFIC OUTPUT.

Papers related to nanoscience and technology represents an ever growing fraction of the total scientific output of most countries. For China, South Korea and India, that fraction is now well above the global average.



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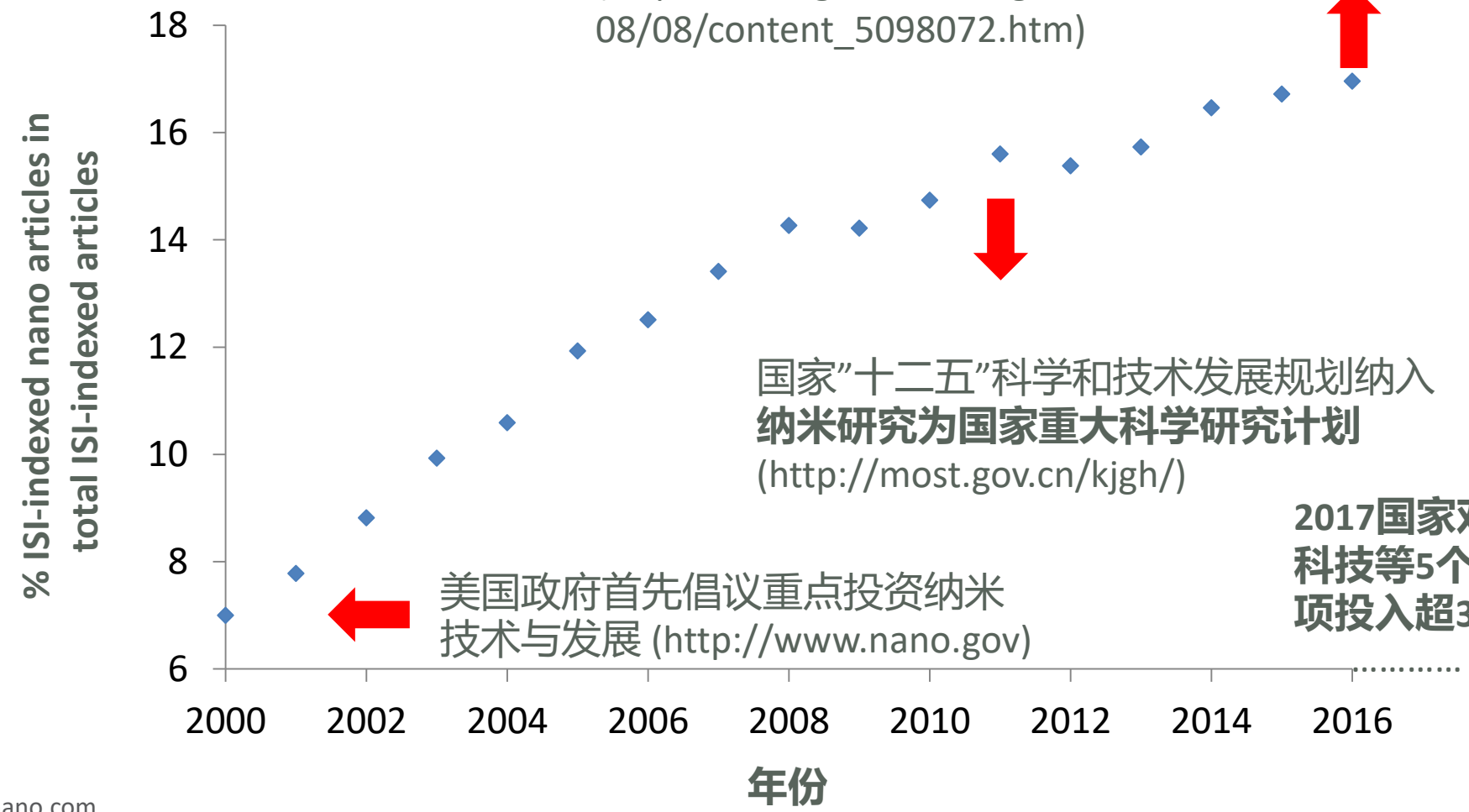
*中国纳米白皮书：国之大器，始于毫末

纳米科技在国家战略里的重要性

国家"**十三五**"科技创新规划纳入**纳米研究为国家科技重大专项、重大科学突破技术及战略性前瞻性重大科学问题**
(http://www.gov.cn/zhengce/content/2016-08/08/content_5098072.htm)



国家"十二五"科学和技术发展规划纳入
纳米研究为国家重大科学研究计划
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2017国家对纳米科技等5个重点专项投入超33.6亿元

美国政府首先倡议重点投资纳米技术与发展 (http://www.nano.gov)

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