FOURTH EU-CHINA IP ACADEMIC FORUM IN THE CONTEXT OF EUCIPAN

EUCIPAN背景下的第四届欧盟-中国知识产权学术论坛

IP in the context of scientific and technological research
科研背景下的知识产权

Nanotechnology – Innovation, IP Protection, and New Business Opportunities
纳米技术 - 创新、知识产权保护与新商业机遇

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Universidad de Alicate, España 西班牙阿利坎特大学

Universitat d'Alacant
Universidad de Alicante

IPKey

Alicante 阿利坎特

22/10/2019 2019年10月22日


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nano
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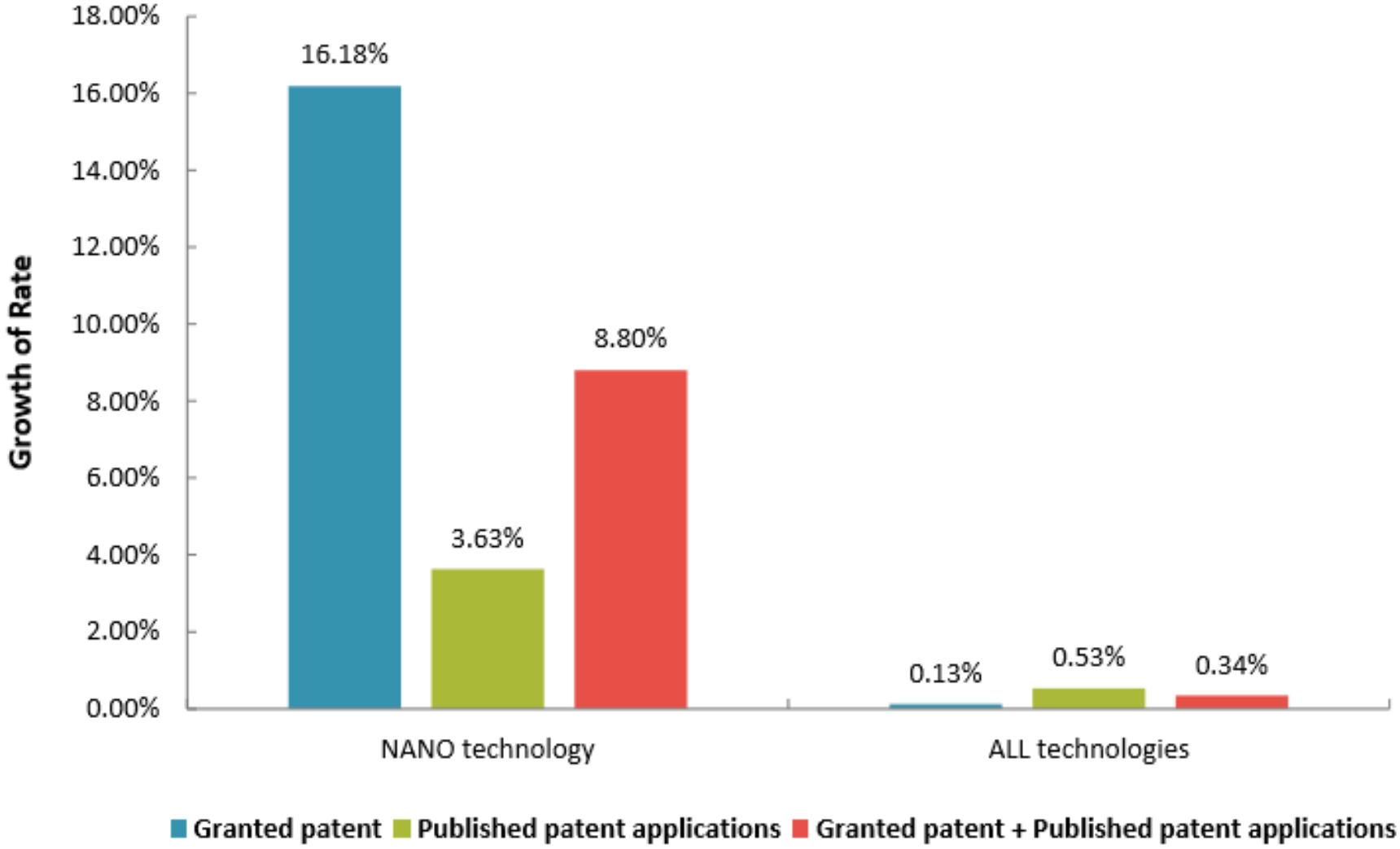
PATENTED
PATENTED

2015 / 2014年美国专利商标局纳米技术专利数量增速

Figure 6: Growth in the number of patents in USPTO in 2015 compared to 2014



nature nanotechnology

Trends in nanotechnology patents

纳米技术专利趋势

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An analysis of 30 years of data on patent publications from the US Patent and Trademark Office, the European Patent Office and the Japan Patent Office confirms the dominance of companies and selected academic institutions from the US, Europe and Japan in the commercialization of nanotechnology.

Table 1 Summary of nanotechnology patent publications for the USPTO (1976–2006), EPO (1978–2006) and JPO (1976–2006).

	USPTO	EPO	JPO
No. of Patents	7,406	3,596	1,150
No. of Countries	46	50	N/A
No. of Institutions	2,196	1,733	404
No. of Inventors	12,885	8,305	2,087

Nature Nanotechnology **volume3**, pages123–125 (2008)
《纳米技术》**第3卷**，第123-125页（2008）

Top 20 countries in filling nanotechnology patents in 2018
2018年申请纳米技术专利数量最多的20个国家

Rank	Country	Nano published applications (USPTO)	Share (%) of USPTO	Nano published applications (EPO)	Share of nano in total (%)
1	USA	5,646	50.1	311	3.1
2	South Korea	1,004	8.9	247	4.3
3	China	913	8.1	169	3.9
4	Japan	792	7.0	327	1.4
5	Taiwan	532	4.7	19	4.0
6	Germany	424	3.8	153	1.9
7	France	295	2.6	106	3.5
8	UK	224	2.0	26	3.1
9	Canada	194	1.7	13	3.1
10	Saudi Arabia	158	1.4	0	17.8
11	Switzerland	140	1.2	64	2.6
12	Netherlands	115	1.0	31	2.3
13	Singapore	85	0.8	7	4.7
14	Belgium	82	0.7	44	5.5
15	Finland	71	0.6	14	3.9
16	Italy	71	0.6	28	2.1
17	India	66	0.6	5	4.0
18	Australia	60	0.5	1	3.0
19	Sweden	52	0.5	7	1.2
20	Spain	46	0.4	61	5.3

All You Need to Know about Universities with Most Nanotechnology Patents of 2018 at USPTO

2018年美国专利商标局 纳米技术专利获批数最多的高校

2019-03-25

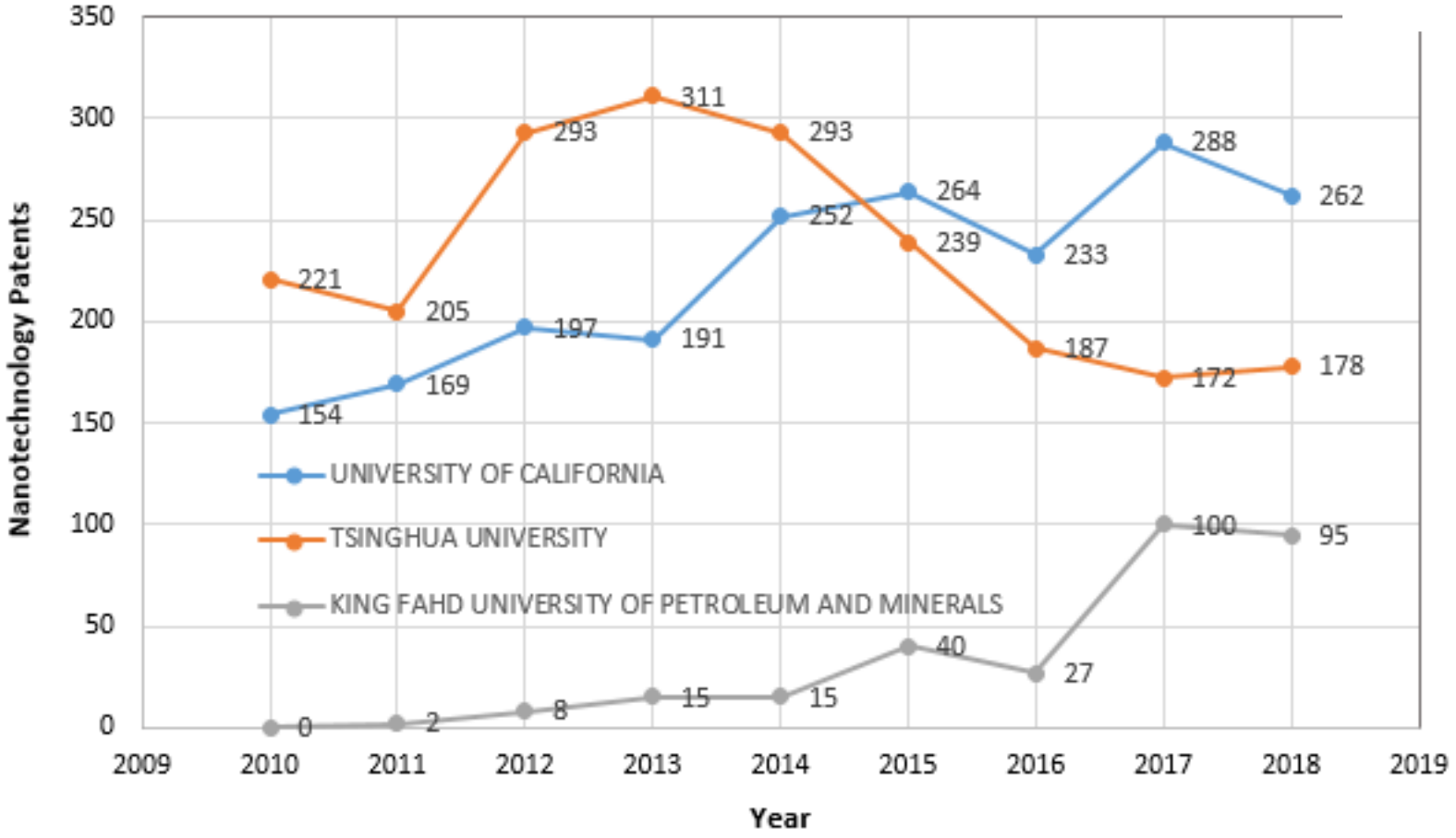


Figure 1. The number of nanotechnology patents issued annually by the top 3 universities at the USPTO 2011-2018
图1： 据美国专利商标局统计， 2011～2018年间每年纳米技术专利获批数最多的三所高校

Source 信源：https://statnano.com/news/65761

应用纳米技术的行业

SECTORS IMPLEMENTING **NANOTECH**

HEALTHCARE

医疗

AUTOMOTIVE INDUSTRY

汽车工业

ENERGY

能源

COSMETICS

美妆

AGRICULTURE

农业

CONSTRUCTION

建筑业

ELECTRONICS

电子产品

Nanotechnology Products Database

5113 PRODUCTS 653 COMPANIES 45 COUNTRIES

Search in Products, Companeis, Nanomaterials, Countries, Industries, Properties and ... GO

Automotive

Products	452
Companies	69
Countries	21

Construction

Products	673
Companies	153
Countries	28

Cosmetics

Products	542
Companies	79
Countries	19

Electronics

Products	1828
Companies	43
Countries	12

Home Appliance

Products	236
Companies	43
Countries	14

Medicine

Products	152
Companies	34
Countries	9

Petroleum

Products	207
Companies	48
Countries	15

Sports and Fitness

Products	386
Companies	20
Countries	12

Textile

Products	377
Companies	135
Countries	27

INVENTORS AND PATENTS

WHERE DO THE INVENTORS COME FROM?

U.S.-based inventors are credited for more than half of nanotechnology patent literature*.

Top 5 Leaders

Percentage of nanotechnology patent literature, based on inventor address:

*According to McDermott Will & Emery, nanotechnology literature encompasses U.S. Published Patent Applications, U.S. Granted Patents, and Published International Patent Applications containing the word "nano" in the claims, title or abstract.

THEN AND NOW

Although the United States leads in nanotechnology innovation, East Asia has grown its efforts over the last ten years.

Percentage of nanotechnology patent literature, based on inventor residence:

Europe
2002 — 22.2%
2012 — 18.5%
Assignee
National Center for Scientific Research

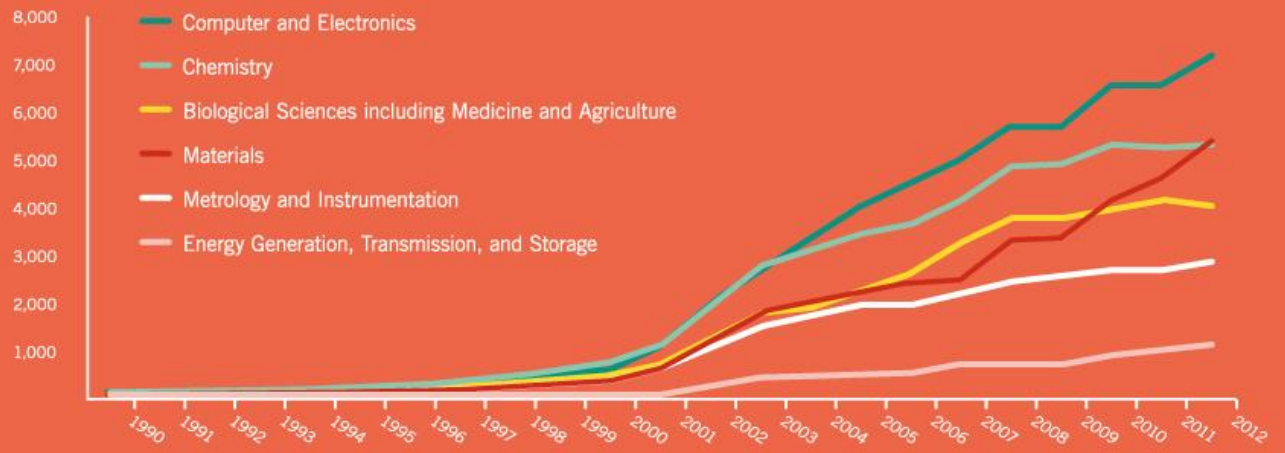
North America
2002 — 47.5%
2012 — 56.6%
Assignees
IBM, University of California, Xerox, MIT, General Electric, Baker Hughes, DuPont

East Asia
2002 — 11.3%
2012 — 23.9%
Assignees
Samsung, Tsinghua University, Hon Hai Precision Industry, Toshiba

WHAT SECTORS GET THE MOST NANOTECHNOLOGY LOVE?

In a digital revolution continually introducing smaller devices, it's no surprise that computers and electronics experience the most nanotechnology innovation. But other industries, such as medicine and materials—likely for commercial use—are also prevalent in nanotechnology patent literature.

Number of nanotechnology patent literature in each sector (1990-2012)

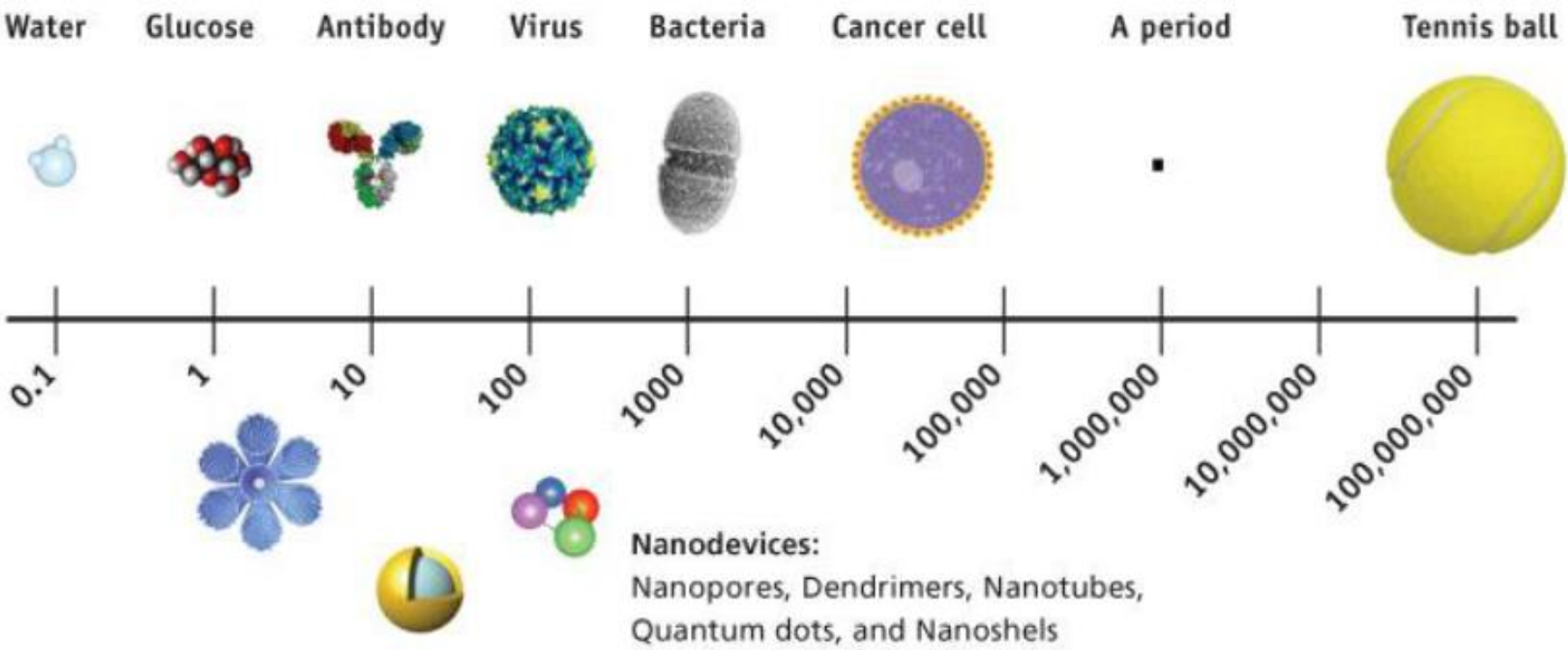


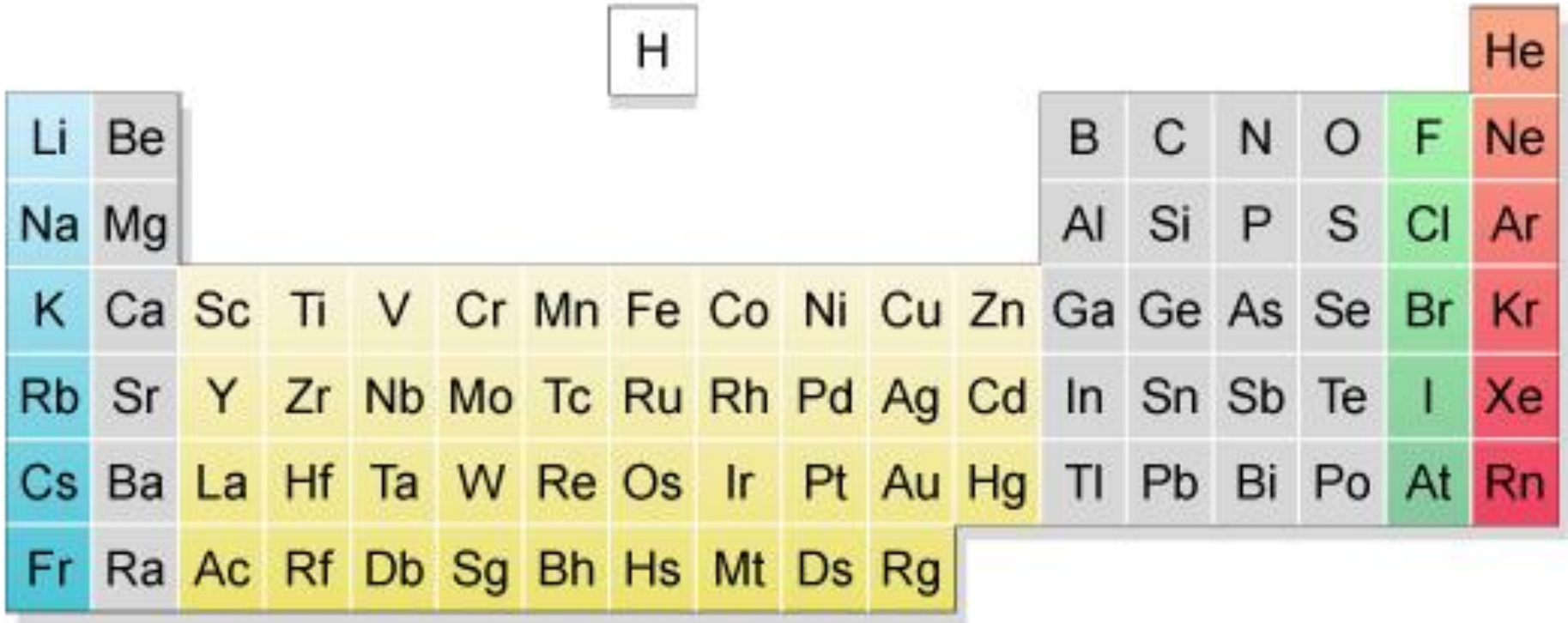
What is Nanotechnology? – Business & Science
何为纳米技术？——商业与科学

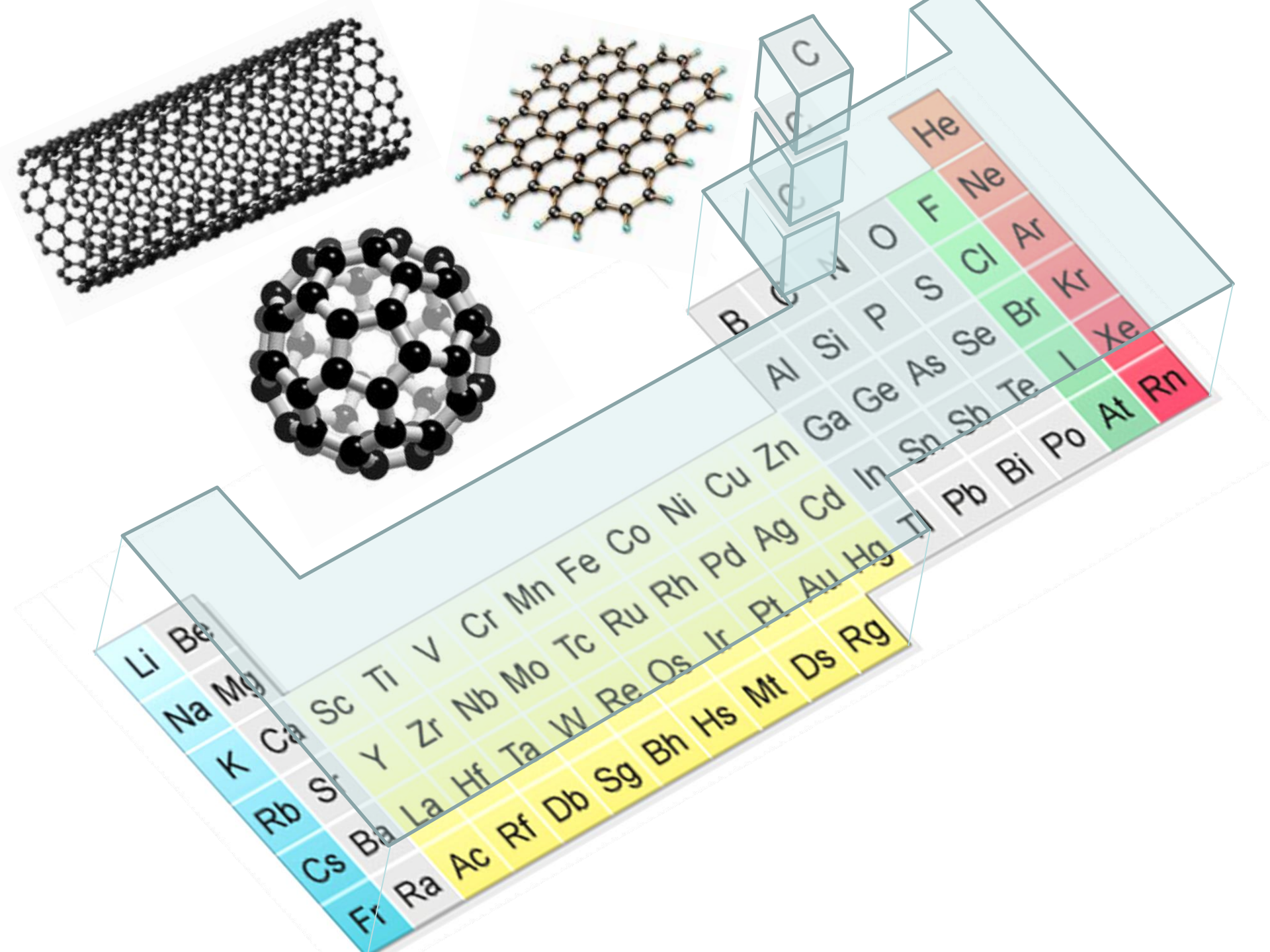
GDP Market (per year) 市场GDP（年度）

$1.5 trillion by 2015

2015为1.5万亿美元




H
He
Li Be
B C N O F Ne
Na Mg
Al Si P S Cl Ar
K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr
Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe
Cs Ba La Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn
Fr Ra Ac Rf Db Sg Bh Hs Mt Ds Rg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Nb
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Y
Hg
Au
Pt
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Hf
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Hs
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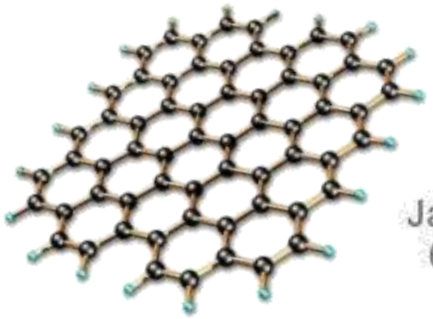
Li
Na
K
Rb
Cs
Fr

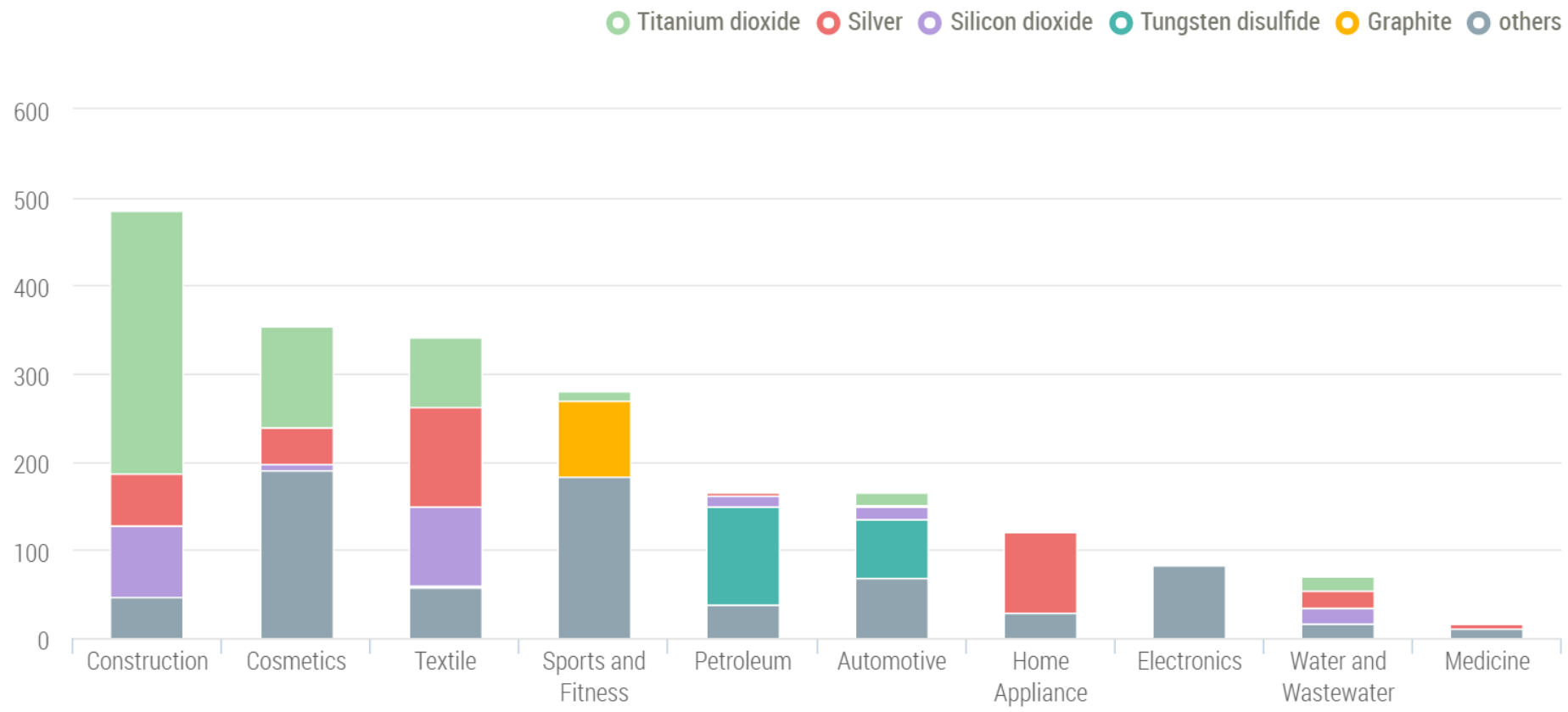
Patent filing authorities 专利主管局



Global distribution of graphene patents © CambridgeIP

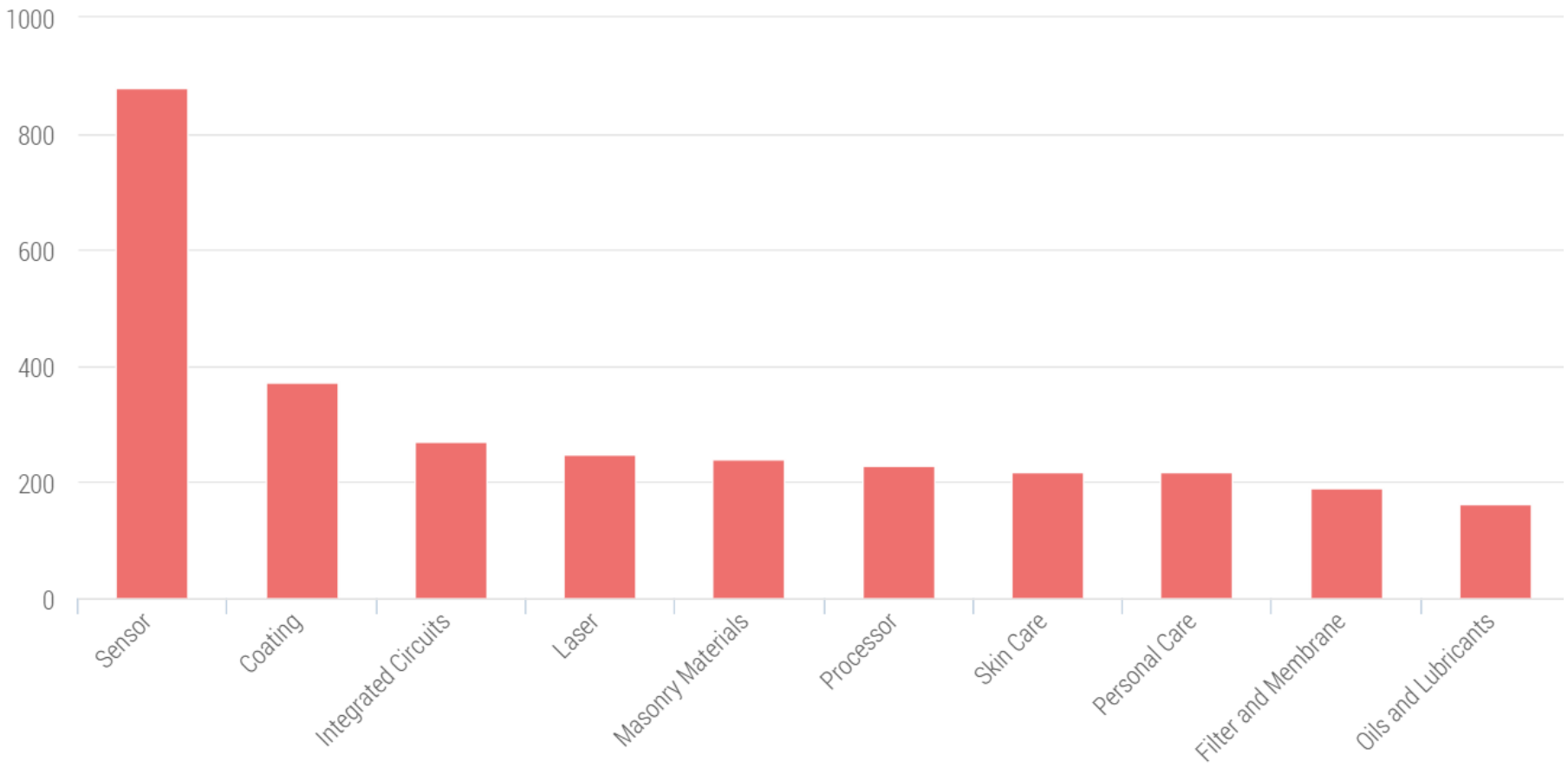
分行业纳米材料应用量

No. Nanomaterials Used in Products by Industrial Divisions



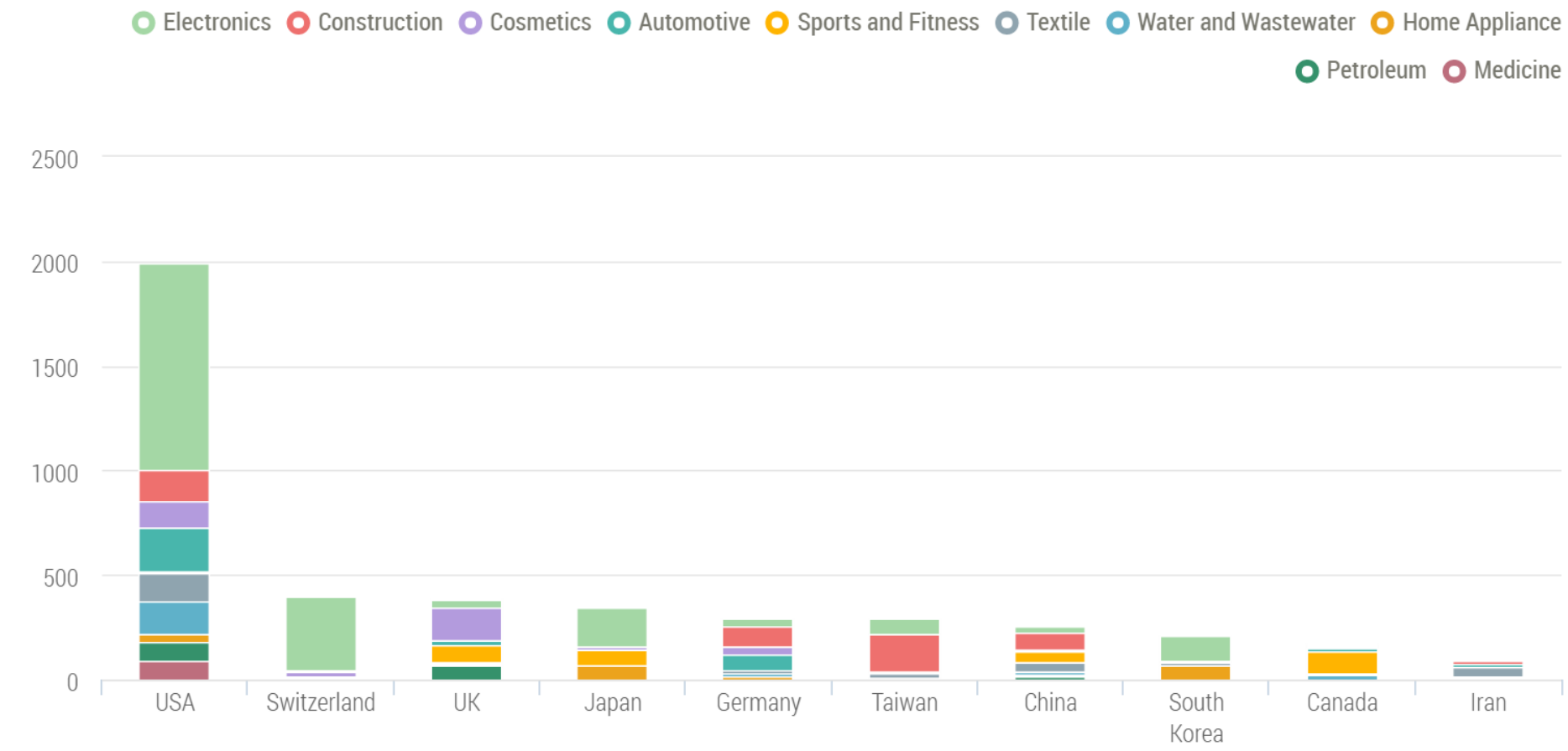
分行业纳米产品数量

No. Products in Industrial Subdivisions



分地区 / 行业纳米产品数量

No. Products in Industrial Divisions by Country



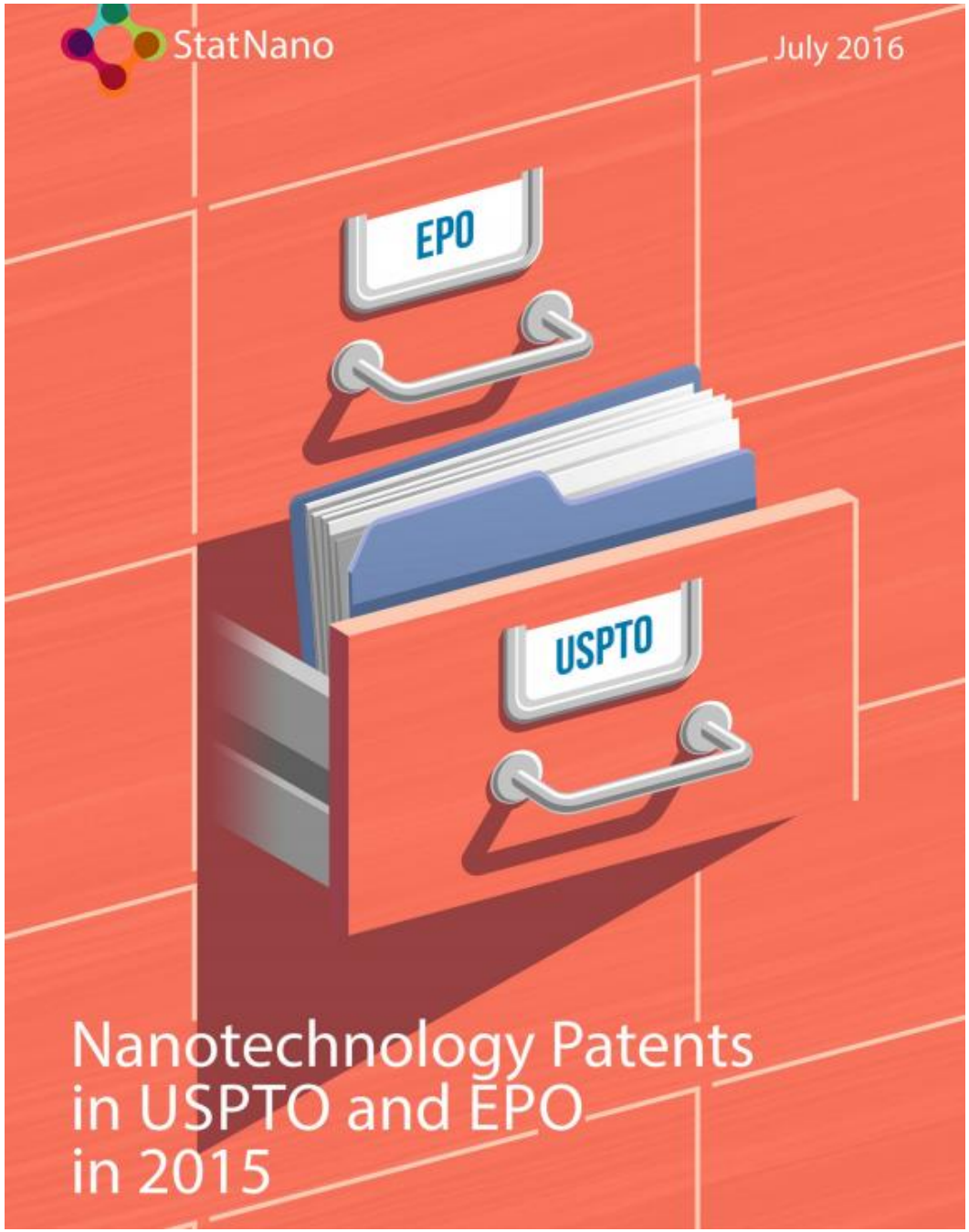


Table 2: Ranking of countries based on the number of nanotechnology granted patents in USPTO in 2015

Rank	Country	No. Nanotechnology Granted Patents (2014)	No. Nanotechnology Granted Patents (2015)	Growth in Number of Granted Patents	Growth in Rank	Share of Country from All Patents	Share of Nanotechnology Patents from All Patents
1	USA	4,053	4,365	7.70%	0	50.83%	2.65%
2	Japan	748	902	20.59%	0	10.50%	1.63%
3	South Korea	594	839	41.25%	0	9.77%	4.05%
4	Taiwan	543	500	-7.92%	0	5.82%	3.79%
5	China	343	393	14.58%	0	4.58%	4.51%
6	Germany	290	307	5.86%	0	3.57%	1.85%
7	France	207	242	16.91%	0	2.82%	3.41%
8	Netherlands	117	156	33.33%	0	1.82%	3.84%
9	UK	100	109	9.00%	1	1.27%	2.28%
9	Canada	113	109	-3.54%	0	1.27%	1.97%
11	Singapore	43	65	51.16%	2	0.76%	3.91%
12	Switzerland	63	64	1.59%	-1	0.75%	1.39%
13	Sweden	43	57	32.56%	0	0.66%	1.66%
14	Saudi Arabia	28	53	89.29%	2	0.62%	12.96%
15	India	41	50	21.95%	0	0.58%	5.57%
16	Belgium	24	45	87.50%	2	0.52%	4.58%
17	Italy	48	41	-14.58%	-5	0.48%	1.83%
18	Finland	28	37	32.14%	-2	0.43%	2.23%
19	Spain	17	27	58.82%	1	0.31%	4.04%

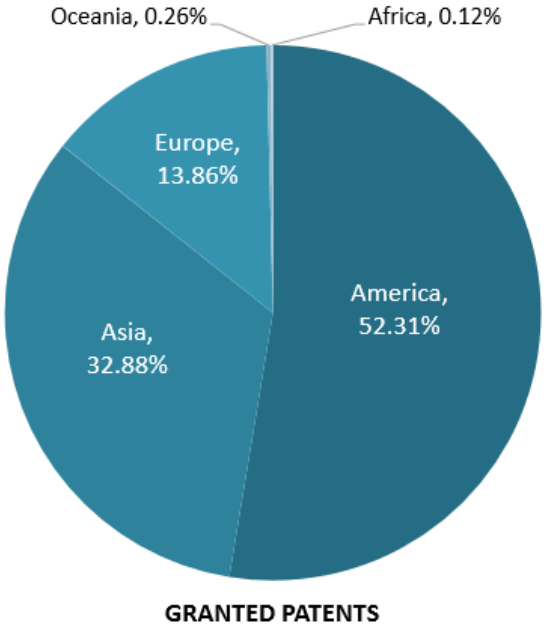


Table 2: Ranking of countries based on the number of nanotechnology granted patents in USPTO in 2015

2015年美国专利商标局纳米技术专利数量排名

Rank	Country	No. Nanotechnology Granted Patents (2014)	No. Nanotechnology Granted Patents (2015)	Growth in Number of Granted Patents	Growth in Rank	Share of Country from All Patents	Share of Nanotechnology Patents from All Patents
1	USA	4,053	4,365	7.70%	0	50.83%	2.65%
2	Japan	748	902	20.59%	0	10.50%	1.63%
3	South Korea	594	839	41.25%	0	9.77%	4.05%
4	Taiwan	543	500	-7.92%	0	5.82%	3.79%
5	China	343	393	14.58%	0	4.58%	4.51%
6	Germany	290	307	5.86%	0	3.57%	1.85%
7	France	207	242	16.91%	0	2.82%	3.41%
8	Netherlands	117	156	33.33%	0	1.82%	3.84%
9	UK	100	109	9.00%	1	1.27%	2.28%
9	Canada	113	109	-3.54%	0	1.27%	1.97%
11	Singapore	43	65	51.16%	2	0.76%	3.91%
12	Switzerland	63	64	1.59%	-1	0.75%	1.39%
13	Sweden	43	57	32.56%	0	0.66%	1.66%
14	Saudi Arabia	28	53	89.29%	2	0.62%	12.96%
15	India	41	50	21.95%	0	0.58%	5.57%
16	Belgium	24	45	87.50%	2	0.52%	4.58%
17	Italy	48	41	-14.58%	-5	0.48%	1.83%
18	Finland	28	37	32.14%	-2	0.43%	2.23%
19	Spain	17	27	58.82%	1	0.31%	4.04%

2015年美国专利商标局纳米技术专利获批数占各国公开申请专利总数比例

Figure 5: Ratio of nanotechnology granted patents to nanotechnology published patent applications for various countries in USPTO in 2015

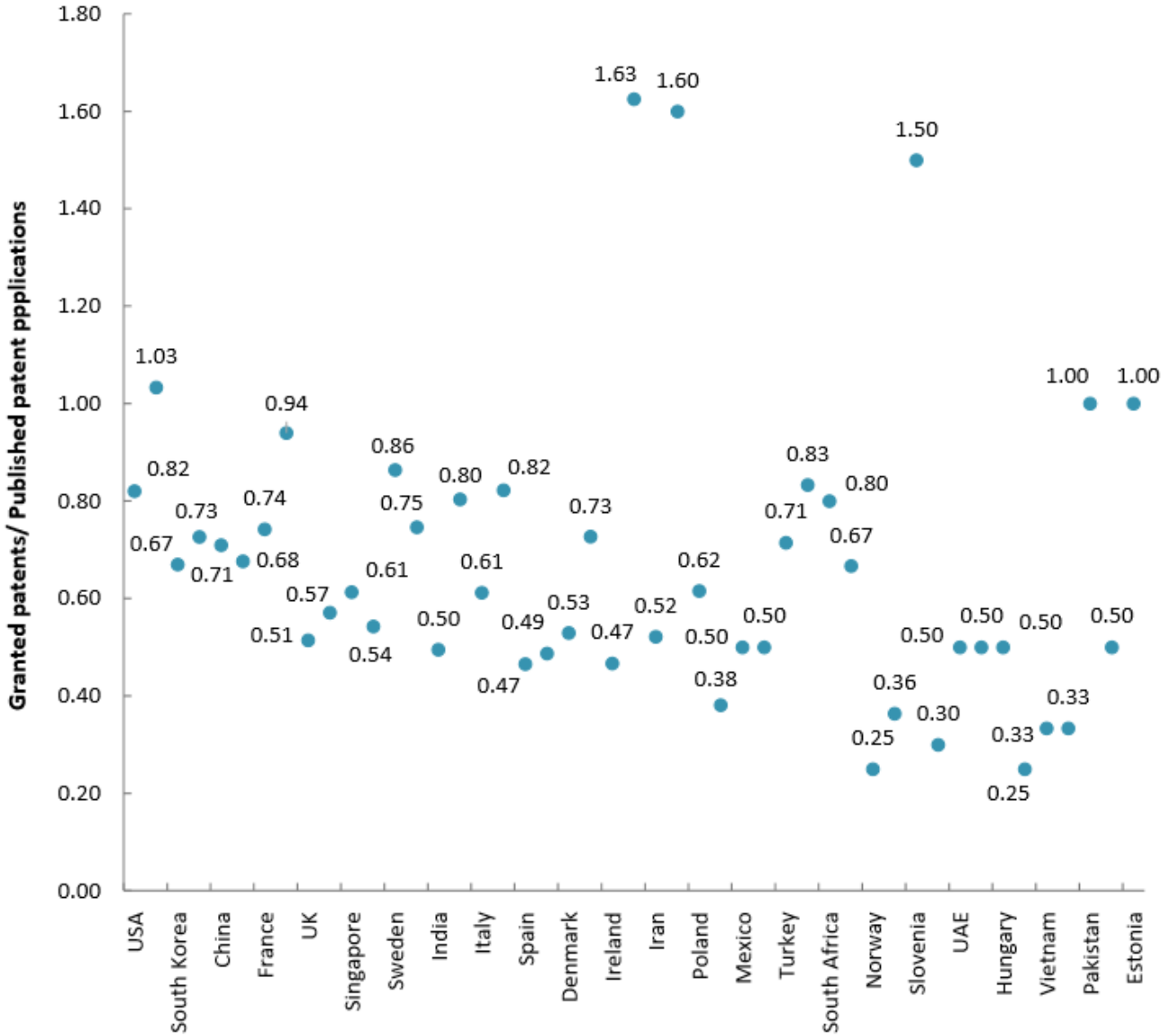


Table 4: Ranking of countries based on the number of patents in all fields of science and technology in EPO in 2015

2015年欧洲专利局专利数排名

Rank	Country	No. Published Patent Applications	Share from All Patents (%)	Rank	Country	No. Granted Patents	Share from All Patents (%)
1	USA	37205	26.07	1	USA	15428	21.89
2	Germany	22857	16.01	2	Germany	14737	20.91
3	Japan	21564	15.11	3	Japan	10776	15.29
4	France	9950	6.97	4	France	5614	7.96
5	South Korea	6206	4.35	5	Switzerland	3403	4.83
6	Switzerland	5680	3.98	6	Italy	2572	3.65
7	China	5570	3.88	7	UK	2259	3.20
8	UK	4627	3.24	8	Netherlands	2247	3.19
9	Netherlands	4295	3.01	9	South Korea	2013	2.86
10	Sweden	3908	2.74	10	Sweden	1985	2.82
11	Italy	3643	2.55	11	China	1490	2.08
12	Finland	2016	1.41	12	Austria	1087	1.54
13	Austria	1823	1.28	13	Belgium	914	1.30
14	Canada	1666	1.17	14	Canada	791	1.12
15	Belgium	1530	1.07	15	Finland	760	1.08
16	Denmark	1384	0.97	16	Denmark	744	1.06
17	Spain	1380	0.97	17	Spain	565	0.80
18	Taiwan	1175	0.82	18	Taiwan	445	0.63
19	Australia	796	0.56	19	Australia	339	0.48
20	India	533	0.37	20	Ireland	279	0.40
21	Norway	520	0.36	21	Norway	264	0.37
22	Ireland	468	0.33	22	Luxembourg	222	0.31
23	Turkey	415	0.29	23	Turkey	220	0.31
24	Singapore	397	0.28	24	India	189	0.27
25	Poland	390	0.27	25	Poland	156	0.22

2014～2015年纳米相关ISI索引论文数

Table 1: Top countries in the publication of ISI indexed nano-articles in 2014 and 2015

Rank	country	No. of ISI nano articles (2014)	No. of ISI nano articles (2015)	Share of ISI nano articles (2015)	Growth of ISI nono articles comparing to 2014	Growth of Rank comparing to 2014	Growth of share comparing to 2014
1	China	41,199	46,363	33.89%	12.53%	0	5.74%
2	USA	22,342	22,814	16.67%	2.11%	0	-4.09%
3	India	9,368	10,266	7.5%	9.59%	0	2.88%
4	South Korea	8,254	8,652	6.32%	4.82%	0	-1.56%
5	Germany	7,875	7,943	5.815	0.86%	0	-5.22%
6	Japan	7,274	7,086	5.18%	-2.58%	0	-8.48%
7	Iran	5,525	6,419	4.69%	16.18%	0	9.07%
8	France	5,225	5,446	3.98%	4.23%	0	-1.97%
9	UK	4,361	4,672	3.41%	7.13%	0	0.59%
10	Russia	3,549	4,102	3%	15.58%	2	8.70%
11	Spain	3,897	3,977	2.91%	2.05%	-1	-3.96%
12	Italy	3,745	3,951	2.89%	5.50%	-1	-0.69%
13	Australia	3,065	3,451	2.52%	12.59%	1	5.88%
14	Canada	2,926	3,140	2.3%	7.31%	1	0.88%
15	Taiwan	3,411	3,115	2.28%	-8.68%	-2	-13.96%
16	Singapore	2,304	2,379	1.74%	3.26%	0	-2.79%
17	Saudi Arabia	1,781	2,373	1.73%	33.24%	2	24.46%
18	Poland	1,931	2,187	1.6%	13.26%	0	6.67%
19	Brazil	2,070	2,132	1.56%	3.00%	-2	-3.11%
20	Turkey	1,594	1,807	1.32%	13.36%	1	6.45%
21	Switzerland	1,711	1,780	1.3%	4.03%	-1	-2.26%
22	Netherlands	1,476	1,595	1.17%	8.06%	2	1.74%
23	Malaysia	1,482	1,567	1.15%	5.74%	0	0.00%
24	Sweden	1,547	1,536	1.12%	-0.71%	-2	-6.67%
25	Belgium	1,221	1,299	0.95%	6.39%	0	0.00%
26	Egypt	1,120	1,292	0.94%	15.36%	0	8.05%

Table 1: Top countries in the publication of ISI indexed nano-articles in 2014 and 2015

2014～2015年纳米相关ISI索引论文数

Rank	country	No. of ISI nano articles (2014)	No. of ISI nano articles (2015)	Share of ISI nano articles (2015)	Growth of ISI nono articles comparing to 2014	Growth of Rank comparing to 2014	Growth of share comparing to 2014
1	China	41,199	46,363	33.89%	12.53%	0	5.74%
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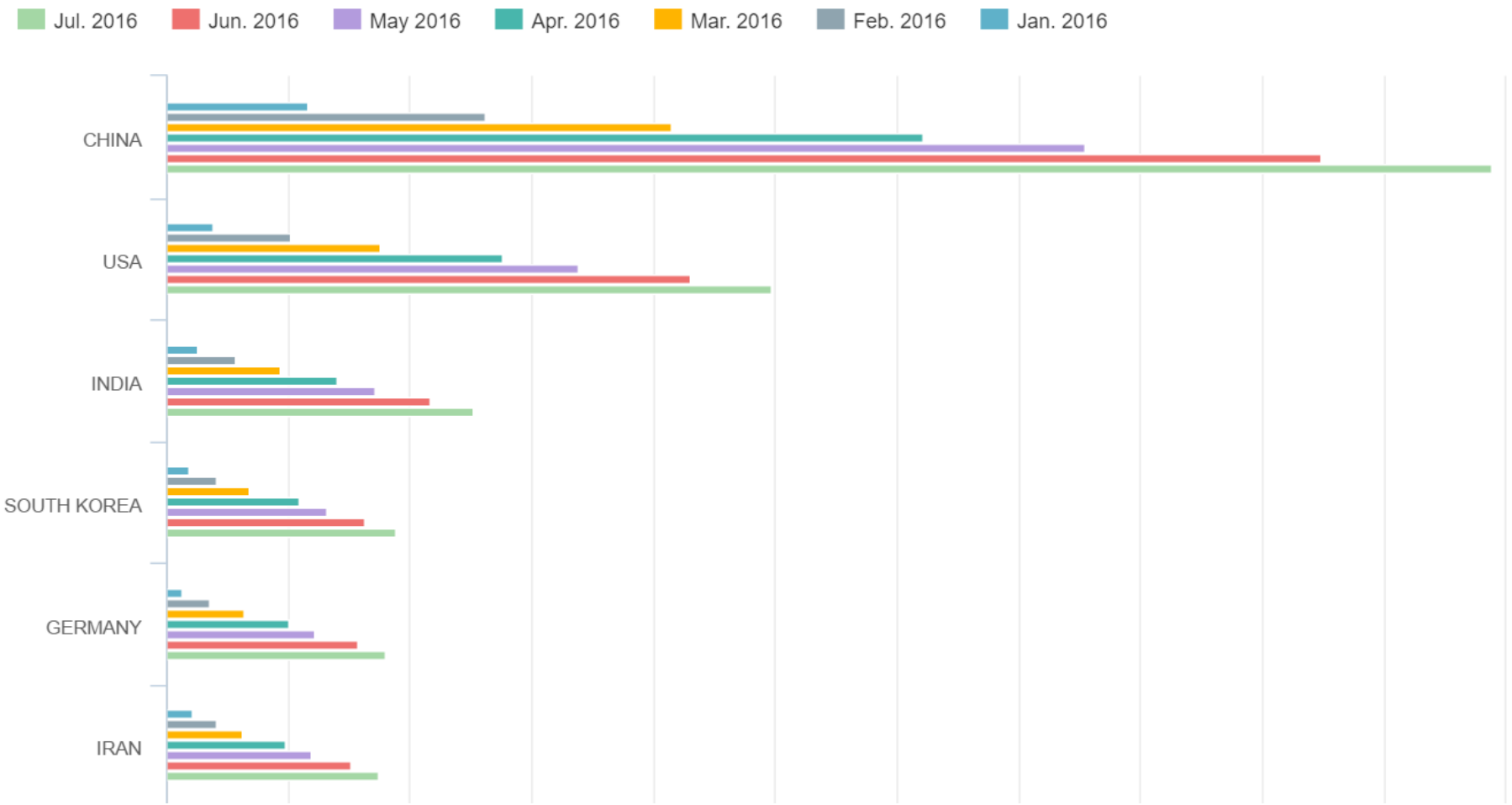
5	Germany	7,875	7,943	5.815	0.86%	0	-5.22%
6	Japan	7,274	7,086	5.18%	-2.58%	0	-8.48%
7	Iran	5,525	6,419	4.69%	16.18%	0	9.07%
8	France	5,225	5,446	3.98%	4.23%	0	-1.97%
9	UK	4,361	4,672	3.41%	7.13%	0	0.59%
10	Russia	3,549	4,102	3%	15.58%	2	8.70%
11	Spain	3,897	3,977	2.91%	2.05%	-1	-3.96%
12	Italy	3,745	3,951	2.89%	5.50%	-1	-0.69%
13	Australia	3,065	3,451	2.52%	12.59%	1	5.88%
14	Canada	2,926	3,140	2.3%	7.31%	1	0.88%
15	Taiwan	3,411	3,115	2.28%	-8.68%	-2	-13.96%
16	Singapore	2,304	2,379	1.74%	3.26%	0	-2.79%
17	Saudi Arabia	1,781	2,373	1.73%	33.24%	2	24.46%
18	Poland	1,931	2,187	1.6%	13.26%	0	6.67%
19	Brazil	2,070	2,132	1.56%	3.00%	-2	-3.11%
20	Turkey	1,594	1,807	1.32%	13.36%	1	6.45%

2016年纳米相关ISI索引论文数

NUMBER OF ISI NANO-ARTICLES IN 2016



Total Number of Citations to Nano-articles

Indicator: Total number of citations to nano-articles (Citation)
Description: The total number of times all records have been cited: This field displays the total number of citations to all of the nano-articles in the set of search results.
Source: Web of Science (ISI Web of Knowledge)

纳米相关论文总引用数

Table 4: Top countries in total number of citations to nano-articles in 2013 and 2014

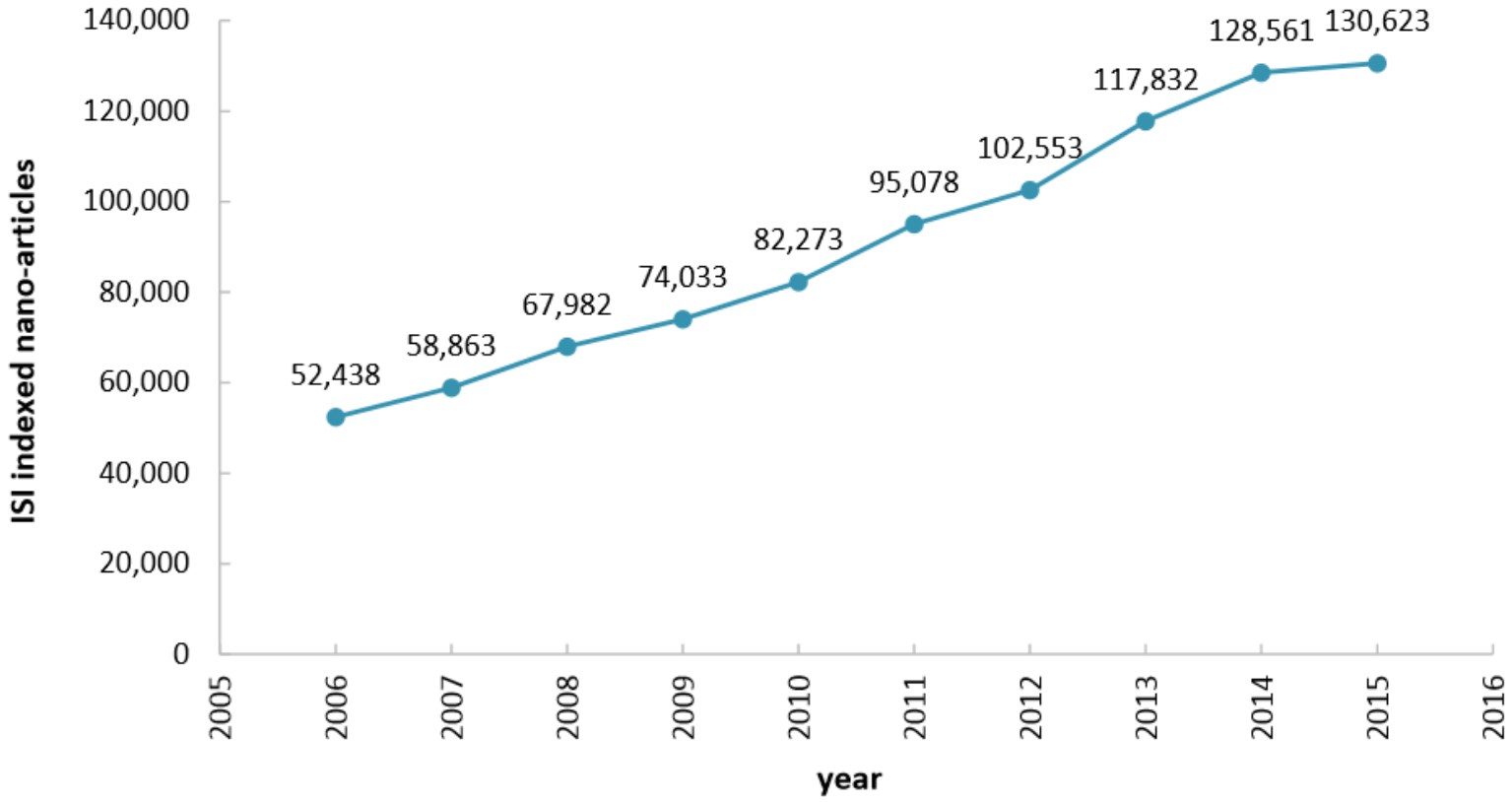
Rank	Country	Citation (2013)	Citation (2014)	Growth of Rank comparing to 2013
1	China	166,791	47,830	0
2	USA	128,586	30,580	0
3	Germany	37,351	9,344	0
4	India	26,651	8,240	2
5	South Korea	32,130	7,939	-1
6	Japan	27,490	6,919	-1
7	UK	23,306	6,159	0
8	France	21,374	5,504	0
9	Iran	13,507	5,043	4
10	Spain	16,689	4,398	-1
11	Singapore	16,278	4,227	-1
12	Australia	15,285	4,202	0
13	Italy	15,647	3,875	-2
14	Canada	13,192	3,467	0
15	Taiwan	12,185	2,913	0
16	Switzerland	10,919	2,690	0
17	Saudi Arabia	5,660	2,254	3
18	Netherlands	8,855	2,145	-1
19	Russia	6,687	1,860	0
20	Sweden	7,308	1,829	-2
21	Belgium	5,349	1,472	0
22	Poland	4,469	1,359	1

Table 5: Top countries in average of citation per nano-article in 2013 and 2014

Rank	Country	average citation per nano-article (2013)	average citation per nano-article (2014)	Growth of Rank comparing to 2013
1	Singapore	7.61	1.83	0
2	Switzerland	6.83	1.57	0
3	Netherlands	5.7	1.45	1
3	Denmark	5.28	1.45	6
5	UK	5.69	1.41	0
6	Australia	5.54	1.37	0
6	USA	5.92	1.37	-3
8	Luxembourg	4.68	1.31	4
9	Estonia	3.85	1.27	14
9	Saudi Arabia	4.56	1.27	6
11	Ireland	5.45	1.23	-4
12	Belgium	4.58	1.21	2
13	Germany	4.98	1.19	-3
13	Moldova	3.27	1.19	19
15	Canada	4.59	1.18	-2
15	Sweden	5.29	1.18	-7
17	China	4.83	1.16	-6
17	Finland	4.44	1.16	0
19	Spain	4.53	1.13	-3
20	Austria	4.25	1.12	0
21	Peru	1.92	1.11	49
22	Bangladesh	2.55	1.06	33

2006～2015年纳米相关ISI索引论文数

Figure 1: Number of ISI indexed nano-articles in 2006-2015

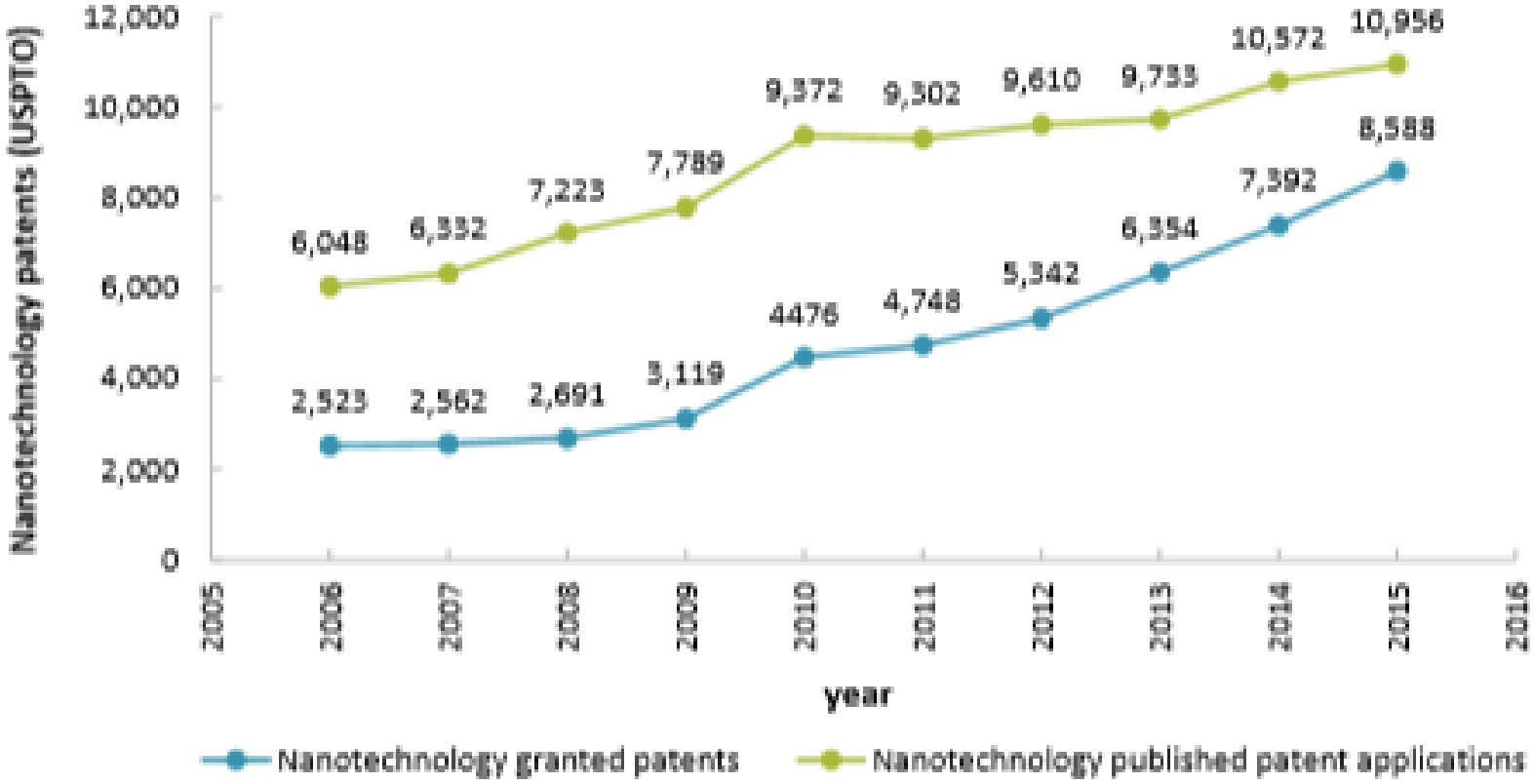


Indicator: Growth of ISI indexed nano-articles (Percent)
Description: Difference between the numbers of ISI indexed nano-articles in the present and in the last year divided to the number of articles in the last year
Source: Web of Science (ISI Web of Knowledge)

2015年美国专利商标局纳米技术公开专利申请定性 / 定量分析

Quantitative and Qualitative Evaluation of Nanotechnology Published Patent Applications in USPTO in 2015

Figure 12: Number of nanotechnology patents and published patent applications in USPTO in 2006-2015



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The Project on Emerging Nanotechnologies

Advanced Search

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About

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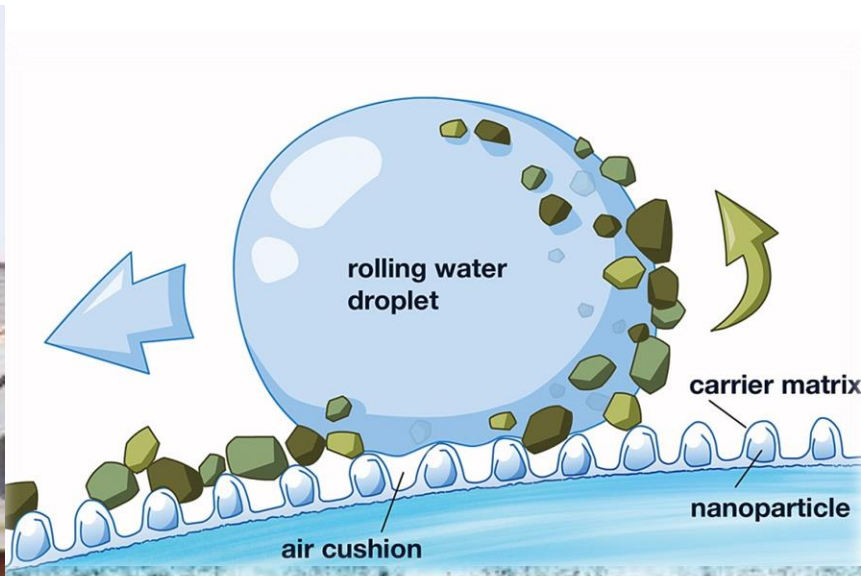
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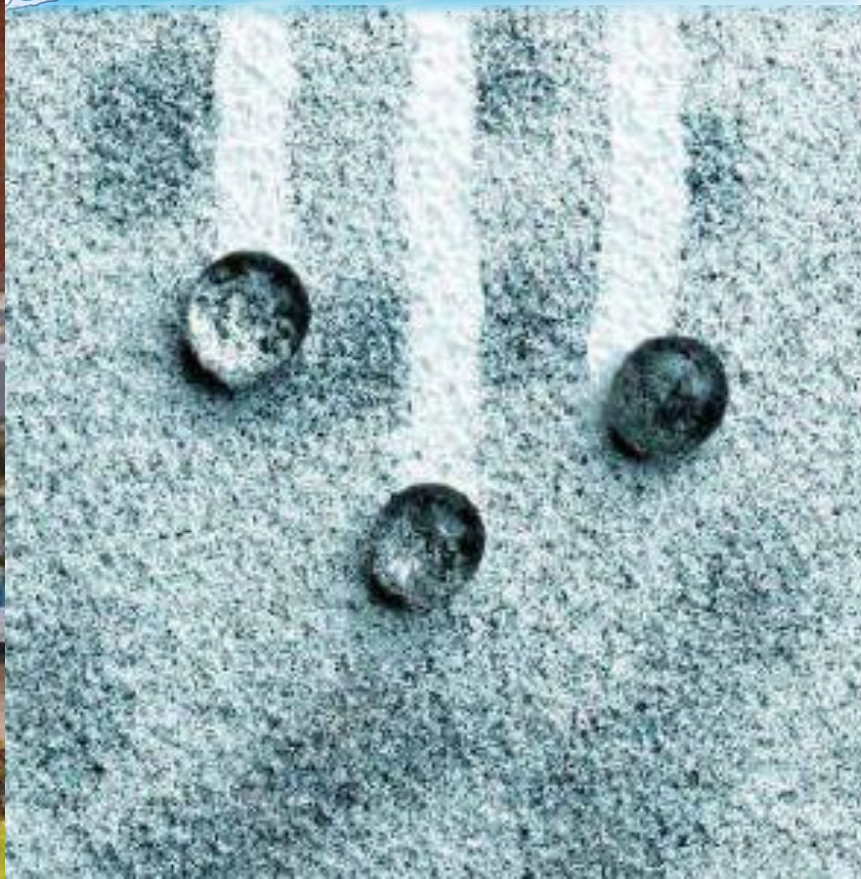
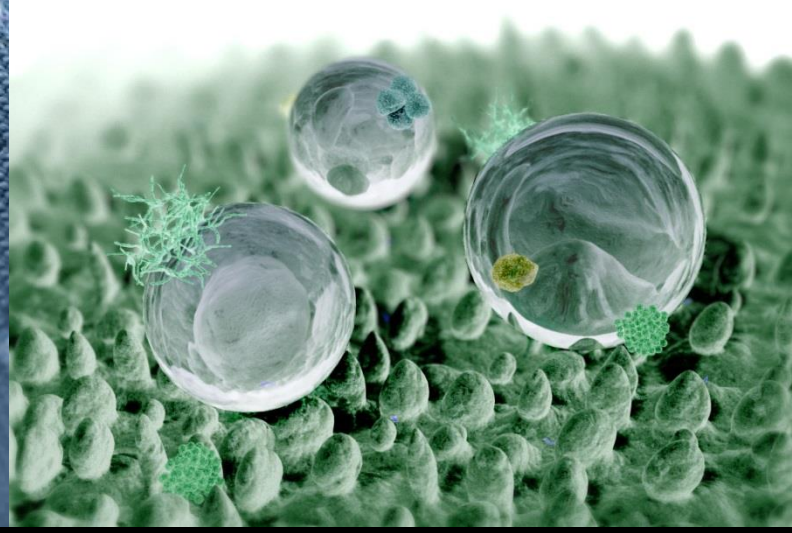
droplet
carrier matrix
nanoparticle
air cushion



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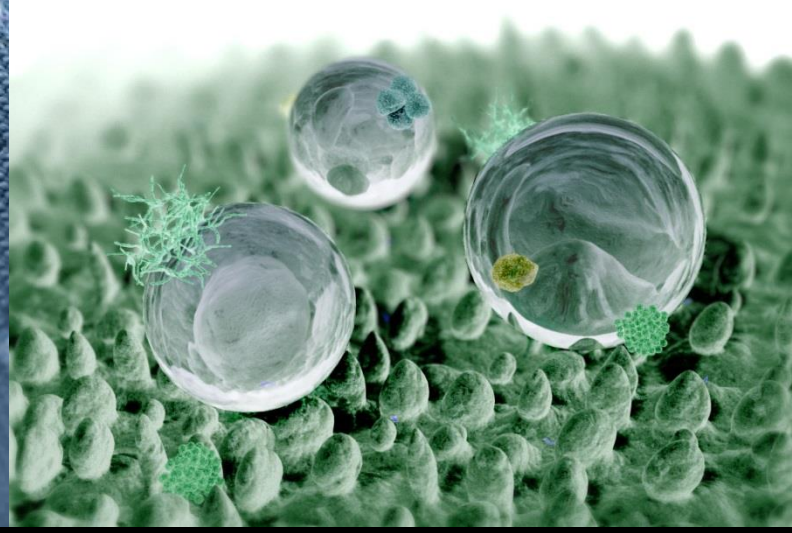

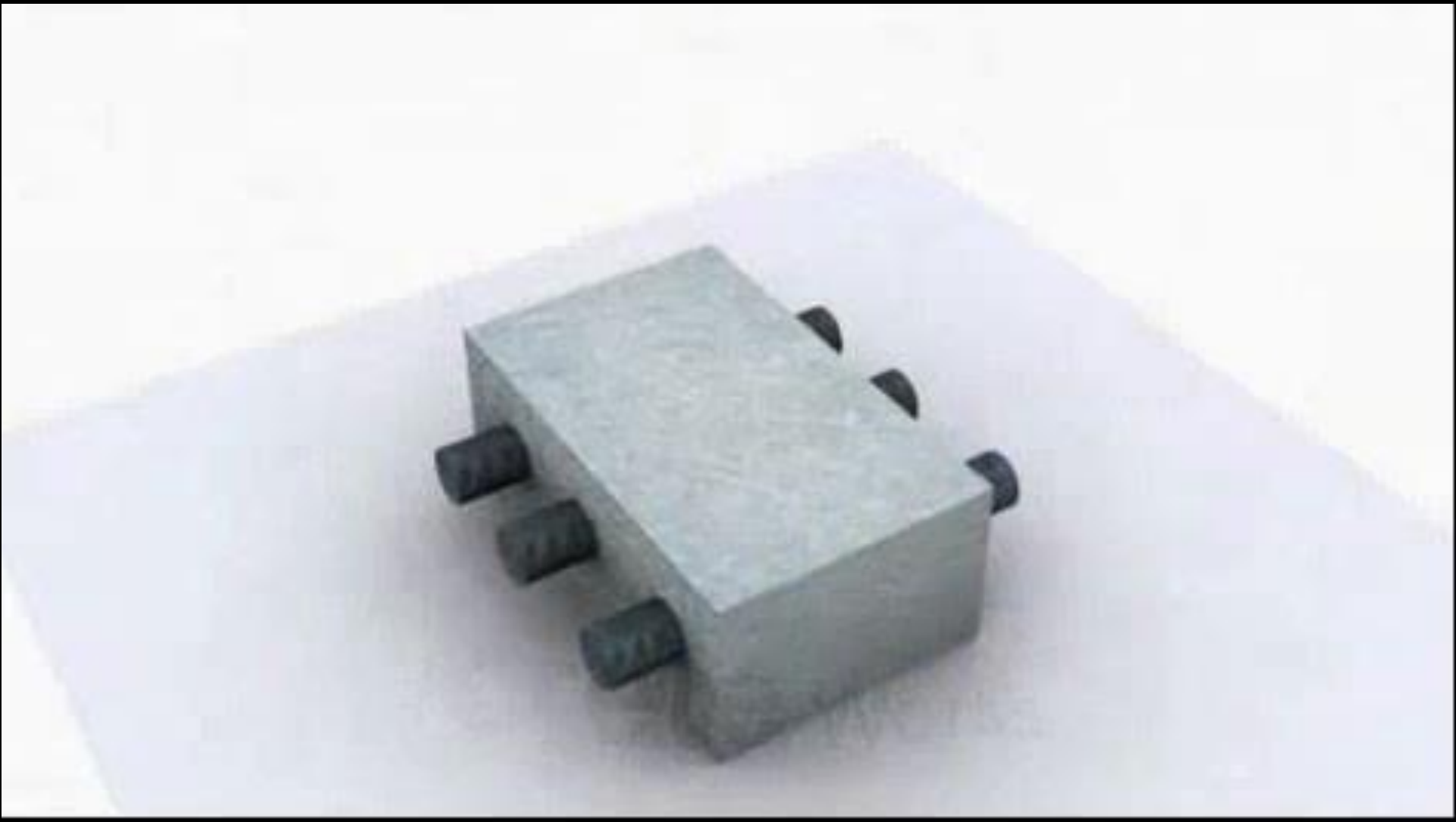


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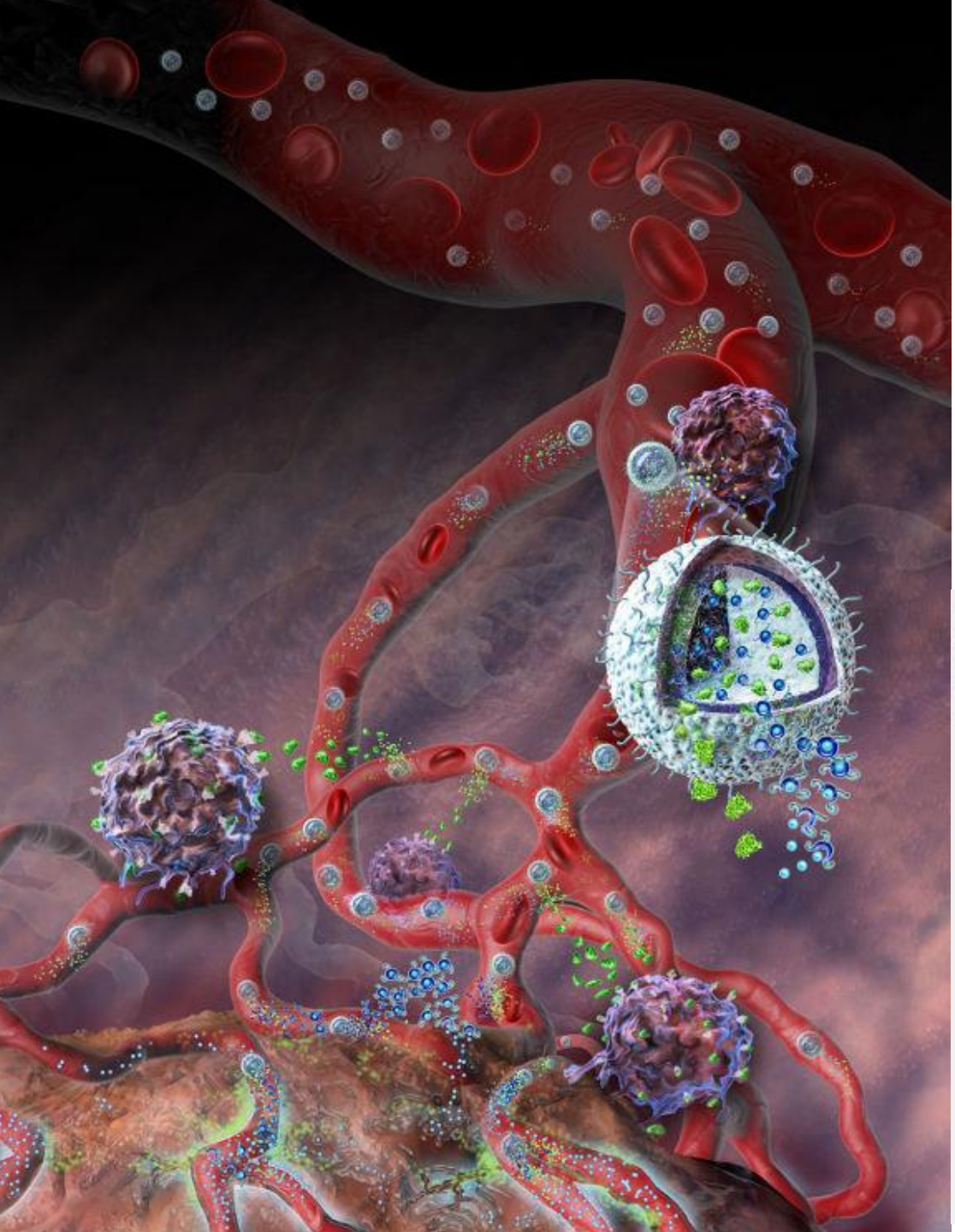

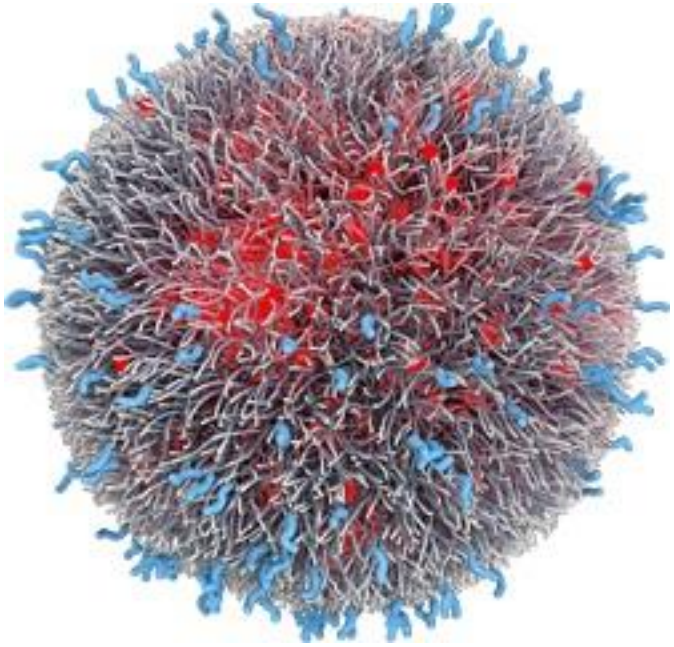

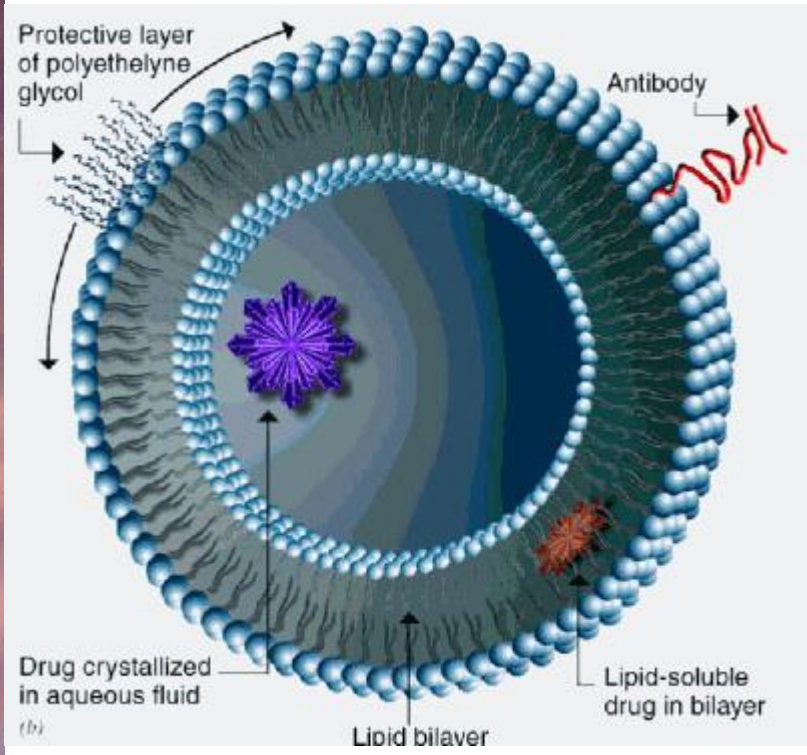
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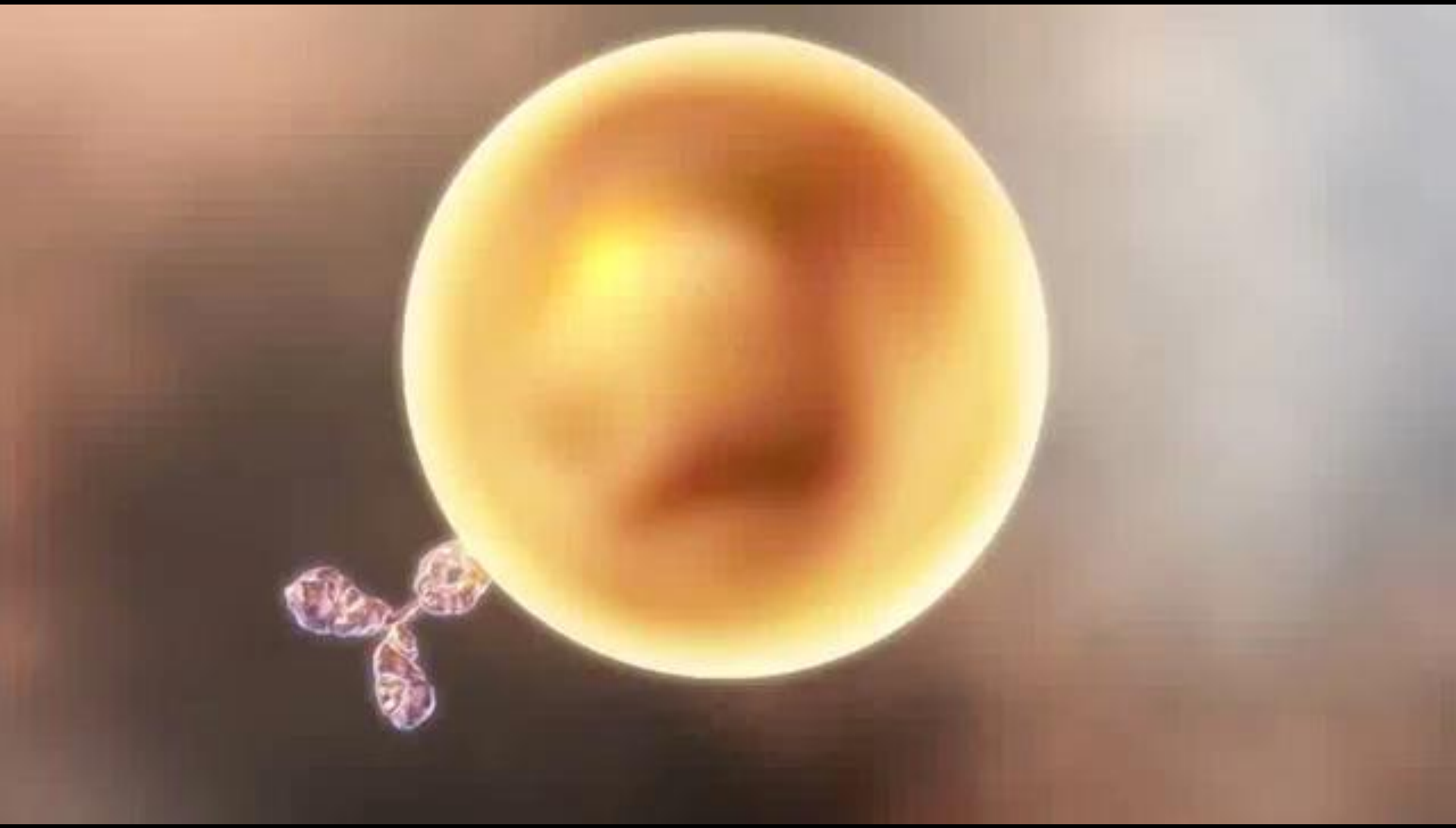
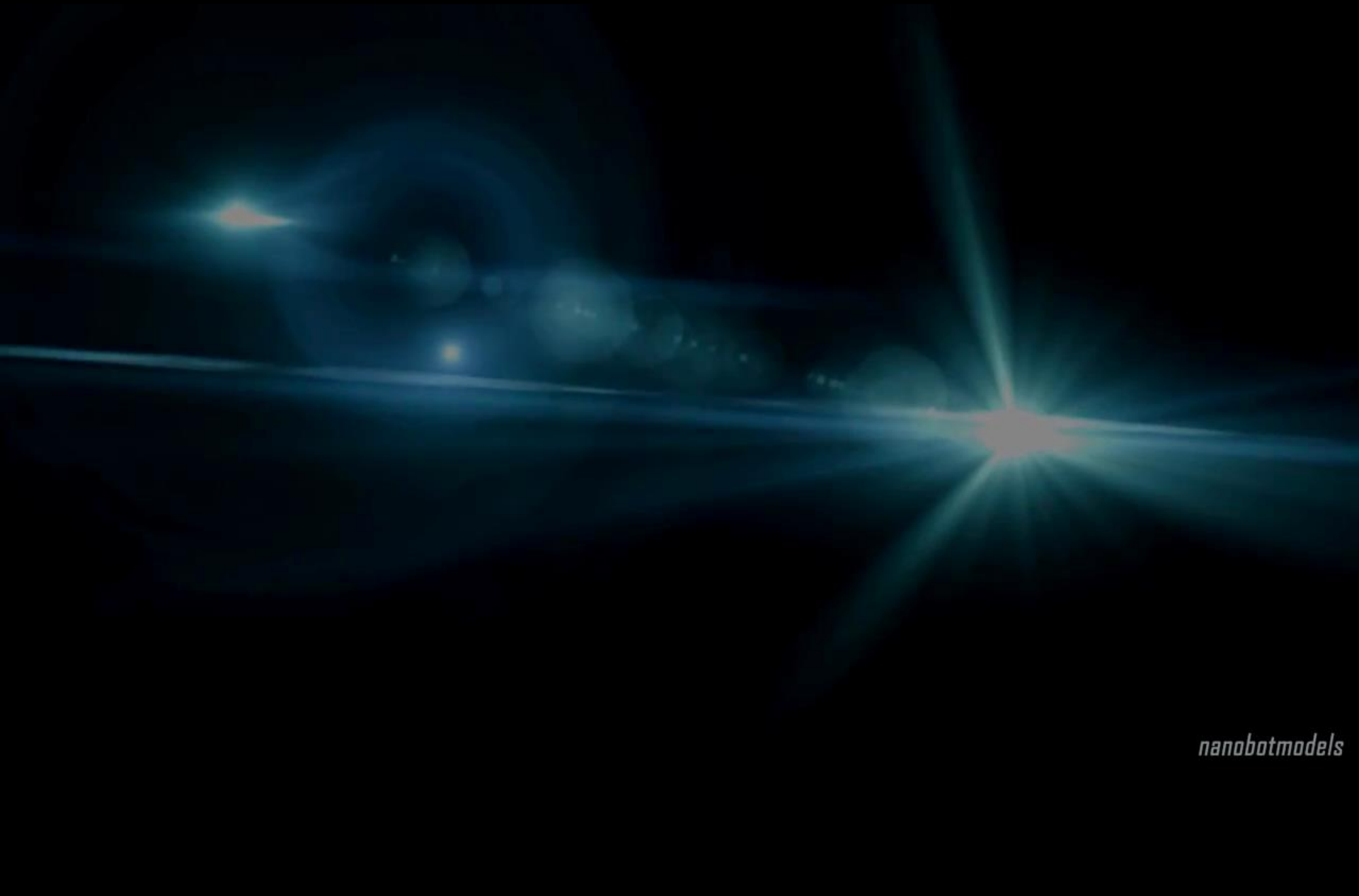
Antibody
Drug crystallized in aqueous fluid
Lipid-soluble drug in bilayer
Lipid bilayer
(b)

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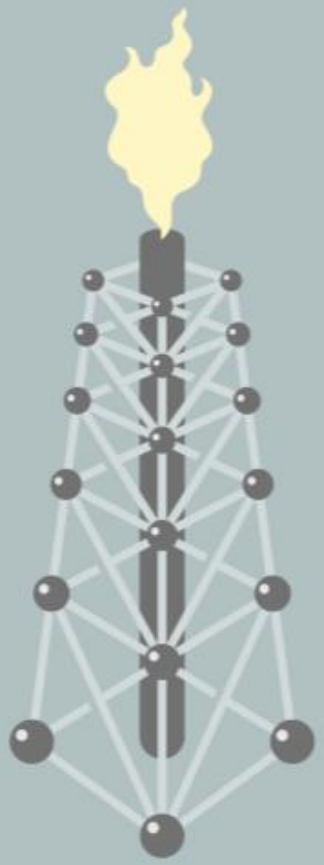
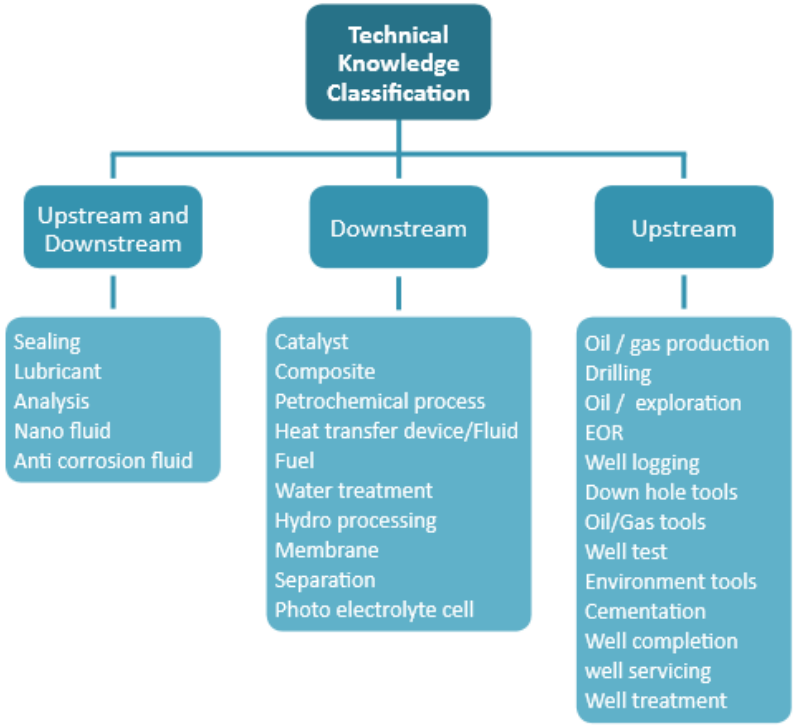


APPLICATIONS OF NANOTECHNOLOGY IN PETROLEUM INDUSTRY

Based on Active Enterprises

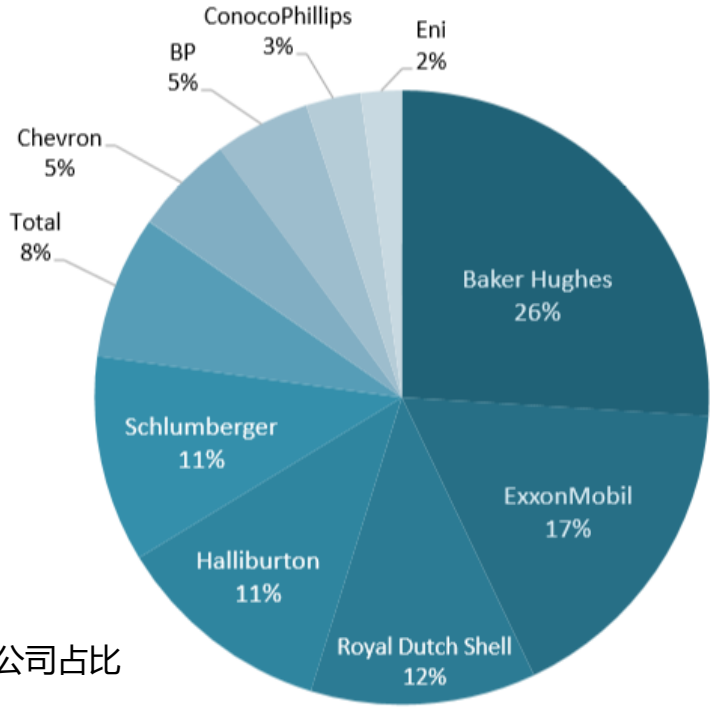


纳米技术
油气行业
相关专利
研究成果

Table 1: Research Results for Nanotechnology Related Patents in the Field of Oil and Gas Industries

No	Enterprise	No. of Patents
1	Chevron	44
2	Schlumberger	91
3	Eni	18
4	ExxonMobil	142
5	Baker Hughes	217
6	Halliburton	96
7	Royal Dutch Shell	99
8	BP	42
9	Total	63
10	ConocoPhillips	24

Figure 3: Share of Enterprises in Patents Related to Application of Nanotechnology in Oil and Gas Industry



各公司占比

Figure 4: No. of Patents Registered in Each Year Related to Application of Nanotechnology in Oil and Gas Industry

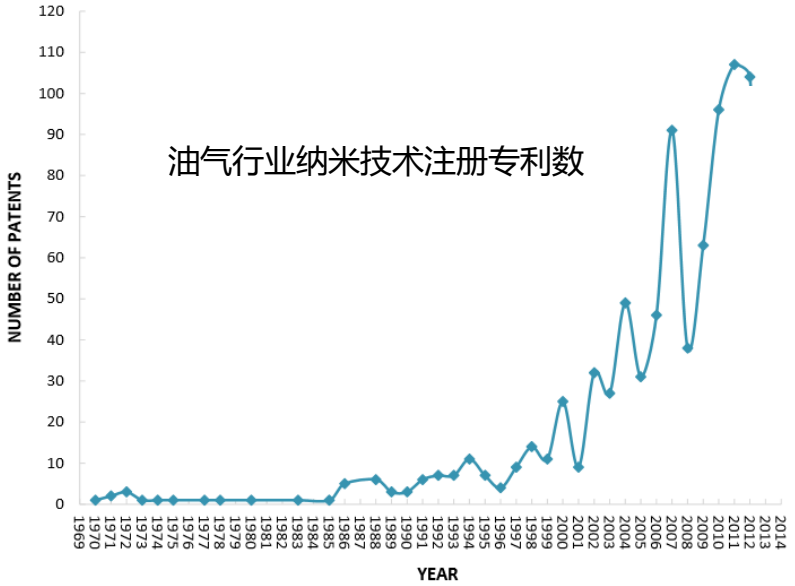
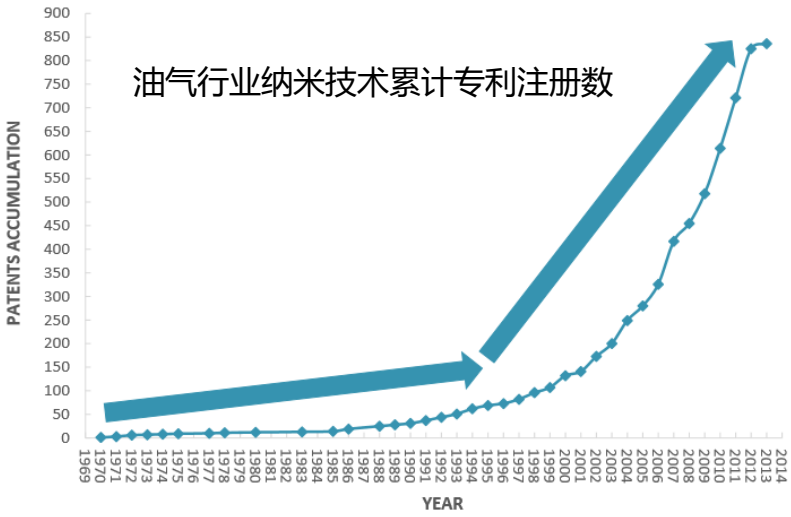
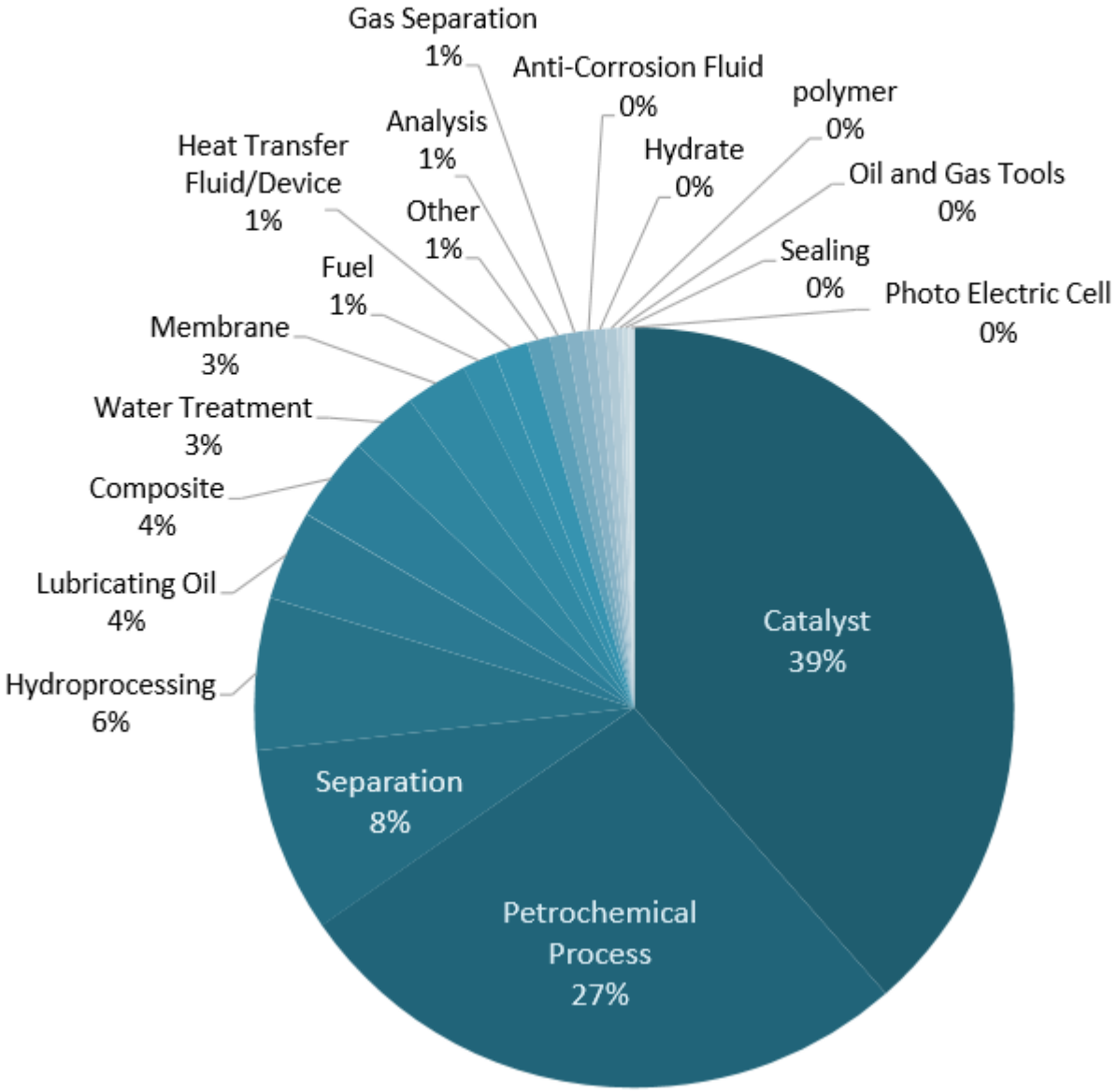


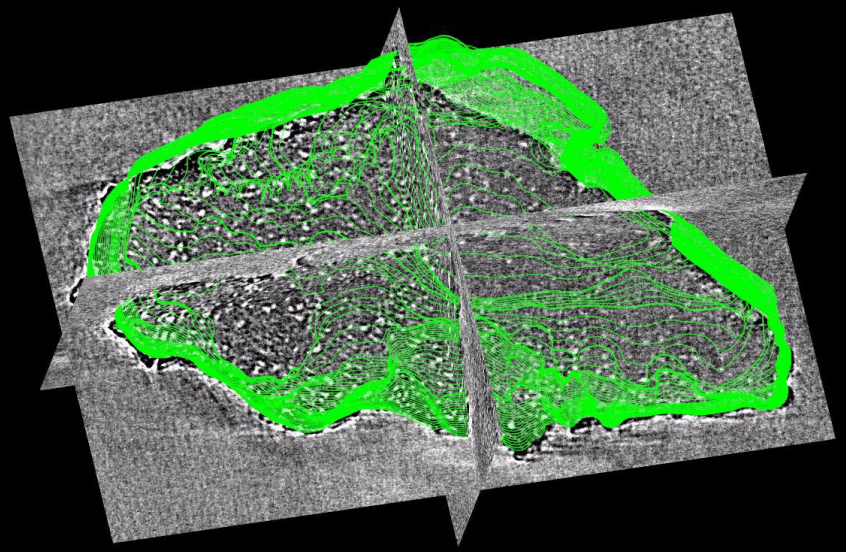
Figure 5: Accumulation of Patent Registration Related to Application of Nanotechnology in Oil and Gas Industry

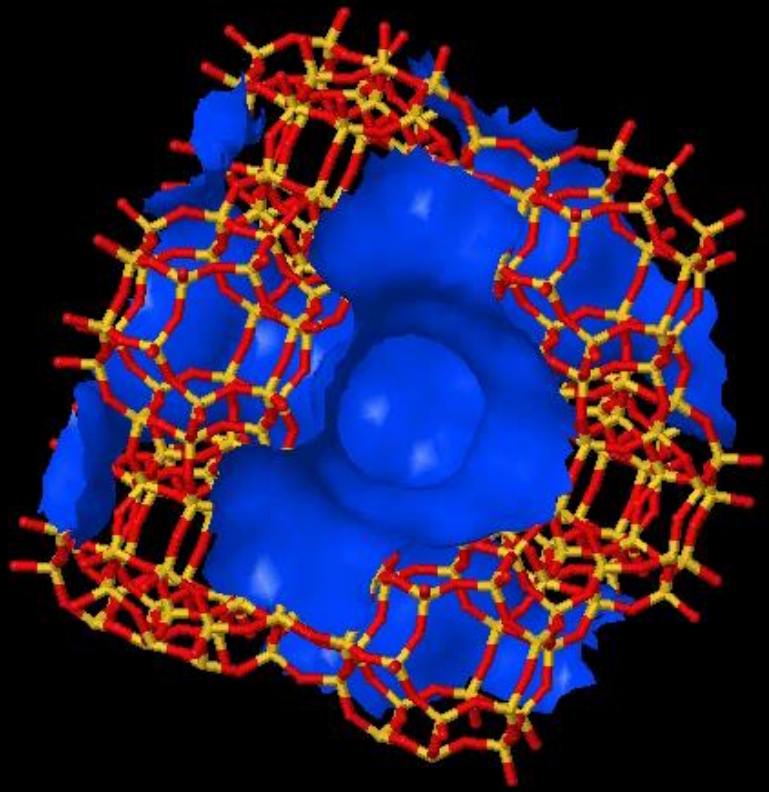


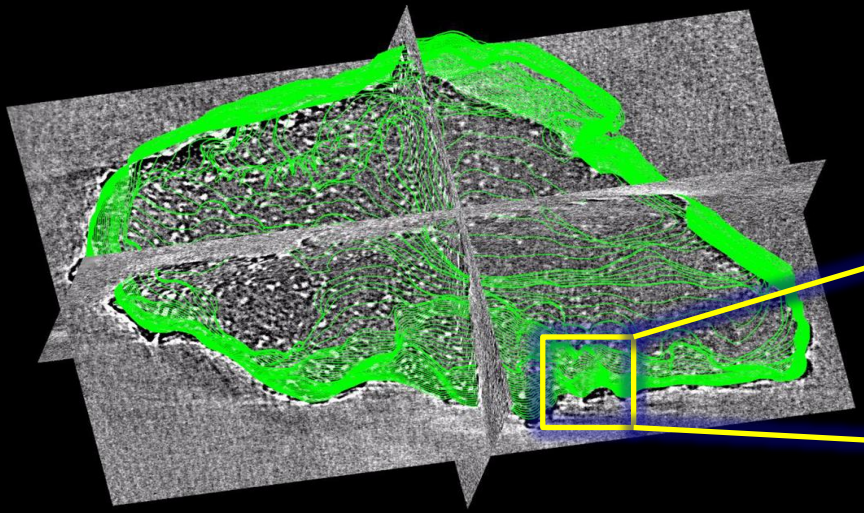
油气行业下游技术纳米技术专利占比

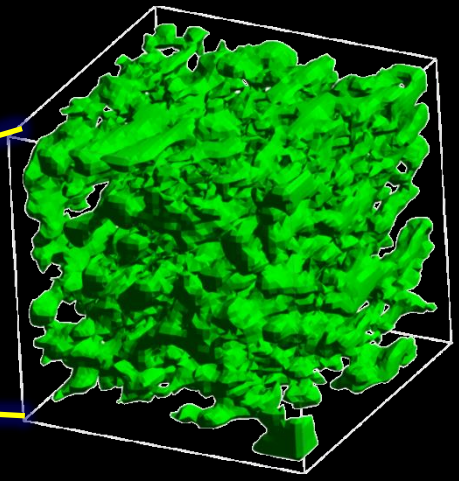
Figure 9: Share of Patents Related to Application of Nanotechnology in Oil and Gas Industry according to Technical Subdivisions at Downstream Section

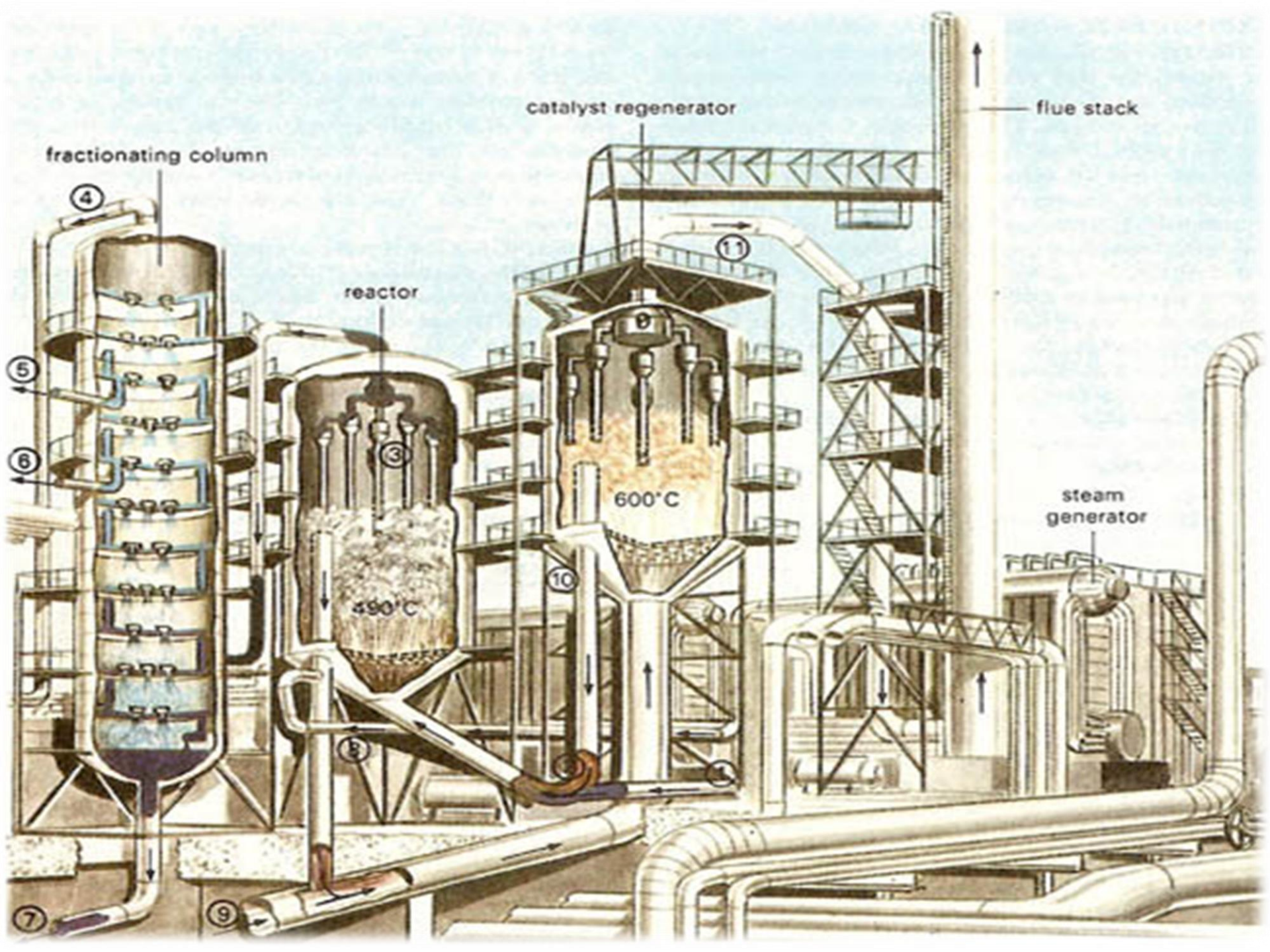











catalyst regenerator
flue stack
fractionating column
reactor
steam generator
600°C
490°C
1
2
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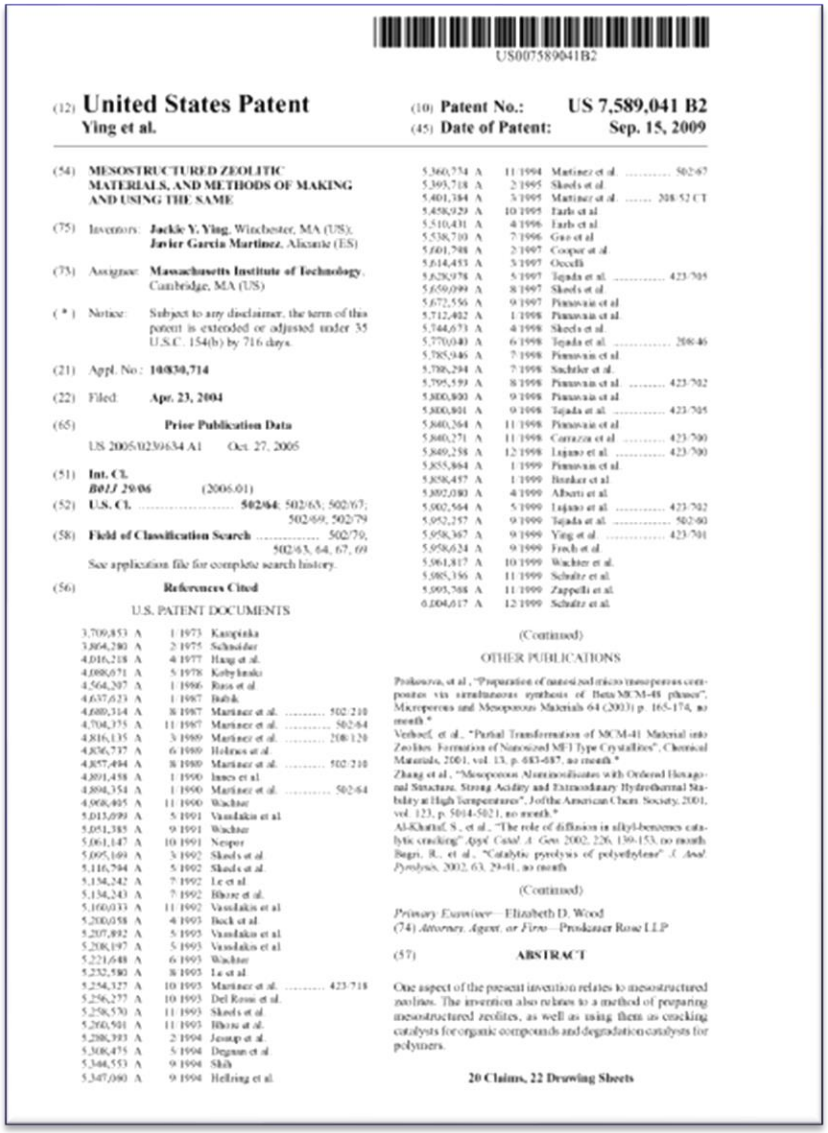

US007589041B2

(12) **United States Patent**
Ying et al.

(10) **Patent No.: US 7,589,041 B2**
(45) **Date of Patent: Sep. 15, 2009**

(54) **MESOSTRUCTURED ZEOLITIC MATERIALS, AND METHODS OF MAKING AND USING THE SAME**

(75) Inventors: **Jackie Y. Ying**, Winchester, MA (US); **Javier Garcia Martinez**, Alicante (ES)

(73) Assignee: **Massachusetts Institute of Technology**, Cambridge, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 716 days.

(21) Appl. No.: **10/830,714**

(22) Filed: **Apr. 23, 2004**

(65) **Prior Publication Data**

US 2005/0239634 A1 Oct. 27, 2005

(51) **Int. Cl.**
B01J 29/06 (2006.01)

(52) **U.S. Cl.** **502/64**; 502/63; 502/67; 502/69; 502/79

(58) **Field of Classification Search** 502/79; 502/63, 64, 67, 69

See application file for complete search history.

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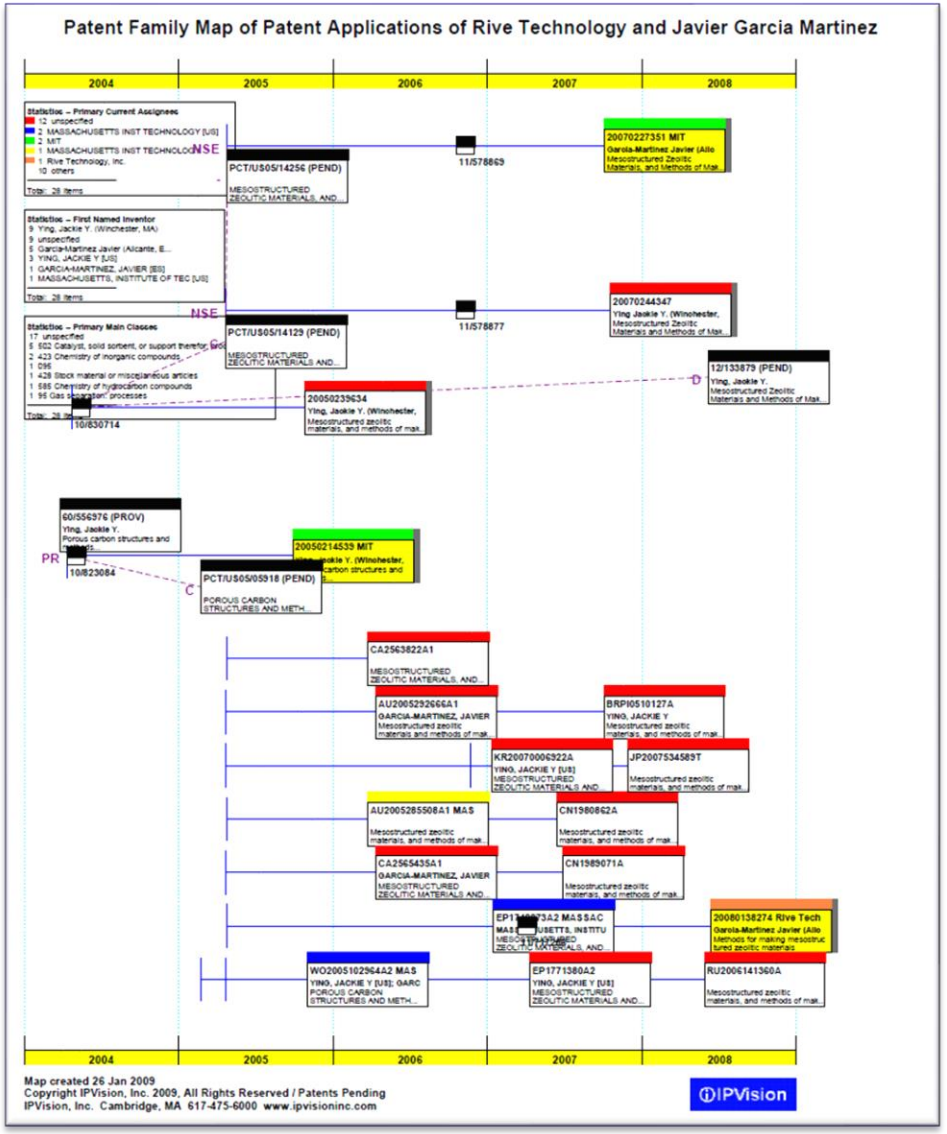
Primary Examiner—Elizabeth D. Wood
(74) Attorney, Agent, or Firm—Proskauer Rose LLP

(57) **ABSTRACT**

One aspect of the present invention relates to mesostructured zeolites. The invention also relates to a method of preparing mesostructured zeolites, as well as using them as cracking catalysts for organic compounds and degradation catalysts for polymers.

20 Claims, 22 Drawing Sheets



Nanoengineered Zeolites: A Commercial Reality 纳米沸石：已成商业现实

MOTIVA ENTERPRISES LLC

Quantified Value-Add 可量化增值

Rive Technology

Rive Catalyst Added: No Refiner Capex Required
添加Rive催化剂：无需精炼炉的资本支出

Rive Impact on Refinery Performance Rive对精炼性能的影响	Predicted 预测	Actual 实际
Decreased Coke Selectivity 焦炭选择性降低	Relative 相对: **- 10 %**	Relative 相对: **-10 %**
Increased Total Liquid Volume 总液量增加	Absolute 绝对: **+2.3 %**	Absolute 相对: **+1.8 %**
Increased C_3 Olefinicity C_3含烯度降低	Relative 相对: **+2.0 %**	Relative 相对: **+2.0 %**
Increased C_4 Olefinicity C_4含烯度降低	Relative 相对: **+2.0 %**	Relative 相对: **+4.0 %**
Decreased Dry Gas Yield 干气产量降低	Relative 相对: **-10 %**	Relative 相对: **-6.0%**
Decreased Hydrogen in Coke 焦炭氢含量降低	Relative 相对: **- 10.0 %**	Relative 相对: **-15.0%**
Increased FCC profitability 流化催化裂化过程盈利性增加	**1.0 per bbl** **$1.0/桶**	**$0.40 – 1.20 per bbl** **$0.40 ~ 1.20 /桶**

Quantified uplift of $20 – 50 million in annual profit for Motiva
量化数据：Motiva的年度利润提升2000 ~ 5000亿美元

American Fuel & Petrochemical Manufacturers, 17 - 47 (2017) 美国燃料与石化产品制造商报告，17-47(2017)

Grace Acquires the Business of Rive Technology, Inc.

COLUMBIA, Md., June 17, 2019 (GLOBE NEWSWIRE) -- W. R. Grace & Co. (NYSE:GRA) today completed the acquisition of the business and assets of Rive Technology, Inc., including its Molecular Highway™ zeolite technology. As part of the transaction, certain research and development, technical services, and commercial employees will join Grace. Financial details of the transaction were not disclosed and the transaction is not expected to change Grace's 2019 financial outlook provided on April 25, 2019.

"Over the past decade, we have seen terrific progress and benefits for our customers by incorporating Rive zeolite technology in certain FCC catalyst applications," said Tom Petti, Grace's President, Refining Technologies. "As demand for petrochemicals grows, the addition of Rive's patented technology allows us to offer our customers greater flexibility in converting crude oil to petrochemical feedstocks. That delivers real value to our global refinery customers." Rive's technology has broad applicability on different types of zeolites that will allow Grace to continue Rive's development activities in applications for a wide range of chemical catalysts and processes.

Rive Technology, Inc. was founded in 2006 to commercialize Molecular Highway™ zeolite technology for catalytic processes, such as those used in fluid catalytic cracking (FCC) units in oil refineries. Invented at MIT by Dr. Javier Garcia-Martinez, Rive's technology improves traditional zeolite catalysts through the introduction of novel channels of medium pore size ("molecular highways"), which enhance the diffusivity of these materials leading to higher value product yields, improved process efficiency, and increased refinery profitability.

Catalysts

RIVE™ FCC Catalysts Powered by Breakthrough Molecular Highway™ Zeolite Technology

INTRODUCING ORDERED MESOPOROSITY

Molecular Highway™ zeolite technology is a surfactant-templated post-synthesis zeolite meso-structuring process that introduces ordered, well-controlled, and hydrothermally stable mesoporosity into zeolite crystals. The Molecular Highway™ process is engineered to allow a high degree of control in the size of and the amount of ordered mesopores that can be incorporated into the zeolite.

In June 2019, W. R. Grace & Co. acquired the patents, intellectual property, and certain assets of Rive Technology Inc. and its breakthrough Molecular Highway™ zeolite technology.

Read the news release.

PERSPECTIVES IN NANOTECHNOLOGY

Nanotechnology
Intellectual Property Rights
Research, Design, and Commercialization

Prabuddha Ganguli ▪ Siddharth Jabade

CRC Press
Taylor & Francis Group

Electrical Engineering

Nanotechnology
Intellectual Property Rights
Research, Design, and Commercialization

"...this invaluable and creative endeavor... will fill the present void of an authoritative reference source in nanotechnology-related IPR. I am sure it will be used extensively as well by students, research workers, entrepreneurs, business management specialists, lawyers, and policy makers involved in the field of nanotechnology."

—R. Chidambaram, Principal Scientific Adviser, Government of India

Nanotechnology Intellectual Property Rights: Research, Design, and Commercialization offers an overview of the dynamics of development and commercialization in nanotech, where strategic integration of IP, R&D, and commercialization has become imperative. It demystifies issues of intellectual property rights (IPR) associated with research, design, technology transfer, and commercialization of innovations in technology-led areas such as nanotech.

Gives all stakeholders vital information to instill confidence by helping them better understand their individual roles in the IPR process

Designed for a diverse readership that may not have background knowledge of the legal nuances of IPR, this book clearly articulates techno-legal aspects of nano-related innovations to aid their effective integration into businesses. This resource stands apart by using numerous case studies and pictorial illustrations, addressing aspects ranging from ideation to commercialization of IP-enabled nanotechnology. It illustrates the evolving patent landscape in nanotechnology, explores the international patent classification system, and details patenting procedures in a range of jurisdictions, including search for nanotechnology prior art and creation of search strategies.

The authors discuss patent-led nanotechnology businesses, presenting a wide range of case studies that address construction of valuable patent portfolios, growth of start-ups, and consolidation of IP-led nanobusinesses through mergers, acquisitions, joint ventures, strategic investments, etc. They also cover patent litigations in nanotechnologies and the significance of strategically crafting agreements related to IP transactions. In addition, they address compliance with contractual obligations, the importance of well-drafted patent specifications, and sensitive aspects of conducting techno-legal due diligence prior to the development and marketing of products. Also covered are vulnerabilities in challenging/defending the validity of patents and negotiating settlements.

Integrating use of the IPRinternalise® model for capacity building in human and infrastructural resources, the authors assess the future of IP landscaping in nanotechnology. Here, they focus on patentability, public perception of risks to health and ecosystems, institutionalized management of intellectual property rights, and the steps that will be necessary to meet these and other such challenges on the way to realizing profits in nanotech.

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