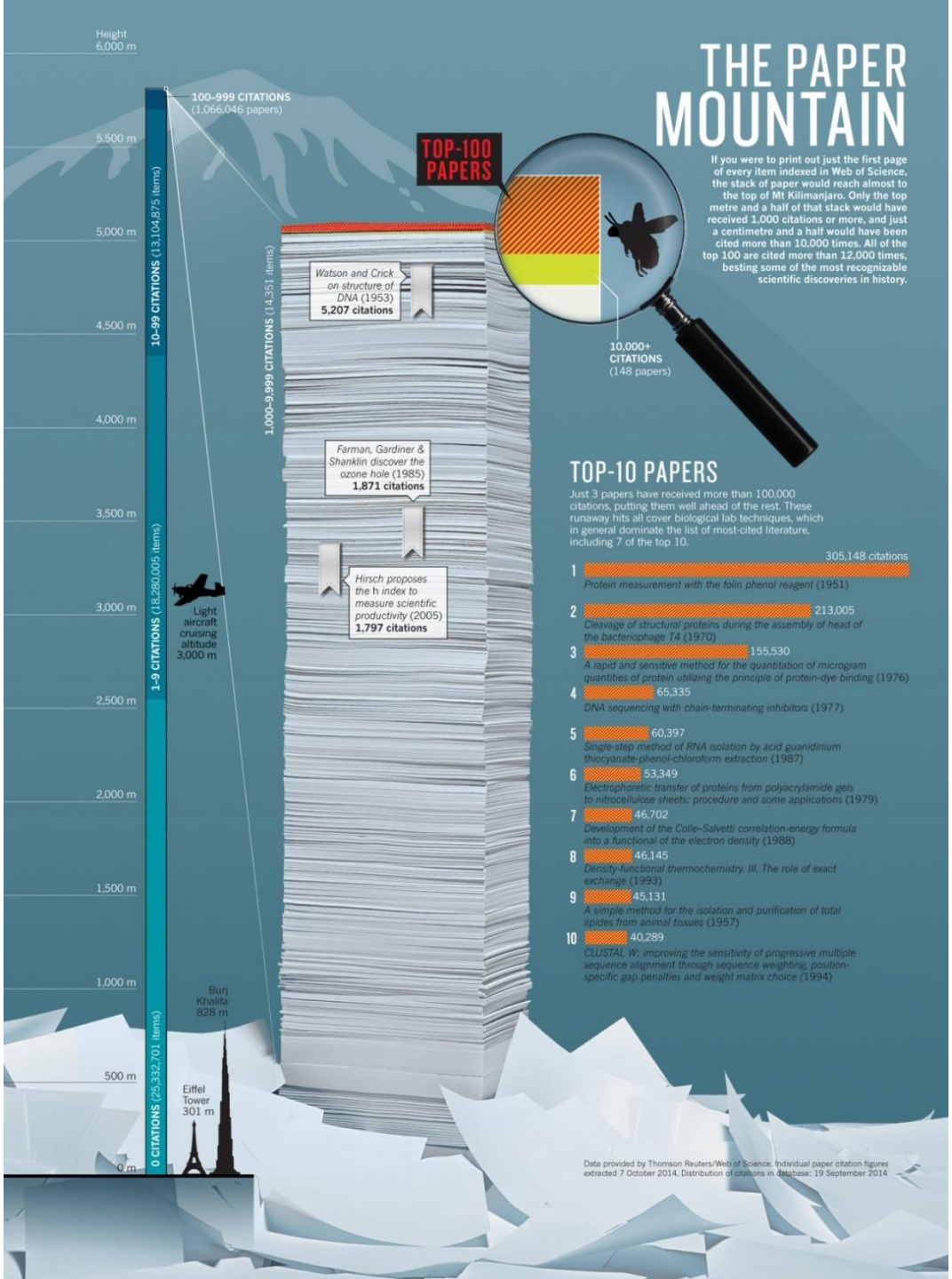
如何发表一流的研究论文？

——些体会与思考

彭慧胜

复旦大学 高分子科学系



Nature 2014, 514, 550

汇报提纲

- 我们的科研环境
- 一流研究与一流研究生
- 论文写作
- 审稿意见与修改

科学研究好像钻木板

有人喜欢钻薄的

而我喜欢钻厚的

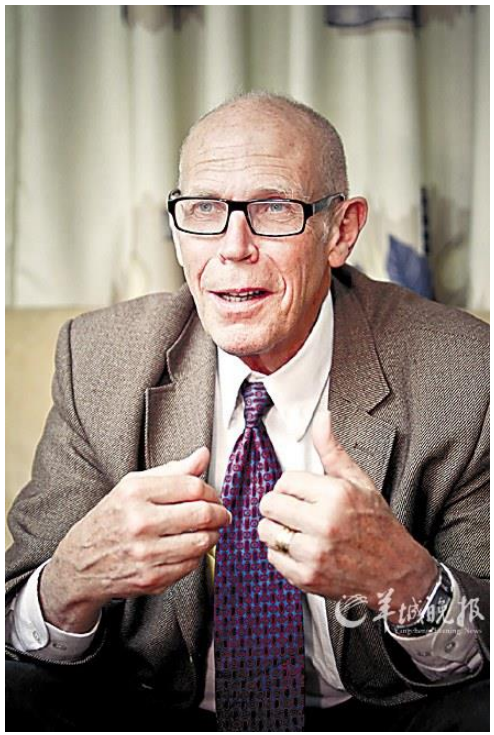
---阿尔伯特·爱因斯坦

《科学的魔力—诺贝尔与物理学》

诺贝尔物理学奖评委会主席Sane Svanberg教授，2006.10

怎样去研究才能够获得诺贝尔奖？

在好奇心驱使下的自由自在的研究，而不是各种功利性的研究。



把中国建成数学大国

陈省身

（２００２年８月１９日《文汇报》）

中国的数学，我一向很乐观，因为中国人有数学的能力，研究数学需要的设备少，如果在数学上有想法，想研究个课题，一个人单独也可以进行，发展比较简单容易。因此，我觉得中国数学的发展会快一点。

２１世纪中国的数学家会越来越多。中国人多，有能力的人也很多，其中就有许多人会念数学，现在人们逐渐了解数学对将来世界的生活、文化的发展有用处，因此数学家会有饭吃，搞得好的人甚至有很好的饭吃。

德国数学家外尔曾开玩笑地说，２１世纪的数学家都要学中文了。我想，到时候数学家并不见得都要学中文，但至少要学中国名字。外国人历来只注意中国人的姓，但是中国数学家多了，光从姓看就搞不清谁是谁了。外尔说数学家们都要学中文，这话我们不敢说，但外国人要学中国名字是肯定的。

数学研究要重视基础

数学研究一定要重视基础。基础数学使得问题变得简单。中国的数学有辉煌的历史，但是中国传统数学却没有复数。传统的中国数学家觉得－1的平方根是没有应用的，一个数的平方怎么可能等于－１？其实，－1的平方根重要极了。因为复数的计算比实数的计算简单得多。如果没有复数，就没有电学，就没有量子力学，就没有近代文明。中国传统数学讲“应用”，不要复数，所以就永远走不到这条路上去。有时候讲应用，眼光要放长远些，视线放得更远一些，也许它的应用会更大。很有意思的是，数学家觉得哪些东西有意思，那些东西里边就必有某种规律，有规律的东西就必然有应用。实际上，真正抽象的数学最有应用，可惜政府、教育界中有些要人还不明白这个道理。

不久前曾有人问我：您和您的学生丘成桐分别获得了沃尔夫奖和菲尔茨奖，中国本土的数学家很多，却从未获得这两项大奖，中国本土什么时候也能培养出这样获大奖的数学家？我说，头一个是工作的人要多，第二个是要有空气。不能够说，要多少钱就给多少钱，要什么设备就给什么设备，然后就说你要得奖，这样是得不到的。经济上的帮助当然是需要的，但这还不是最主要的，还有一个态度问题。

最好的科学是没有计划的

顶有出息的小孩，很少是父母管出来的，小孩有能力、有机会，自然能发展，你管凶了，那就糟了。了解了科学的重要，增加科学研究的经费，当然是好的现象，但是管得太凶不行。对于科学研究，不能事事都要计划，最好的科学是没有计划的，是发现出来的，X光是怎么发现的？是伦琴晚上到实验室，发现这个光太怪，于是去研究，才发现了它的特殊性质。最重要的发现不是上边有个支持，然后跟着做就做得出来的。

我年轻时出来，家里向来都没管过，也没出过钱。我刚好很幸运，数学念得不错，到处可以拿到奖学金什么的。人们要随时对发生在身边的事情有一个决定：你要做什么？我很幸福，因为在每一个时代我都觉得自己有很多事情可以做。做研究是最难的事情了。做几个月做不出来也就罢了，有人甚至做很多年也做不出来，然后就灰心了，牢骚一大堆，不是觉得自己不行，而是说这个不对那个不对，所以我做不出来。我做得很顺利，没有发生这种情况。当然，大部分东西是很难做出来的，但是你要有很多问题可以做，这个做不出，那个就有可能做得出。所以我说，每个人把现在做的事情做好了，这就是很大的成就，中国就有希望。

人的成功受许多因素制约，其中自然包括机遇。机遇与知识很有关系。假如有个外国人住在这里，他很可能就会研究这里有什么虫，小虫子有多少种，有怎样的性质，是不是还有什么方法可以利用。但中国人往往不做这个。中国人很实际，对于能吃的就有兴趣，至于其他的往往就没有兴趣。人住在地球上，地球上东西的性质与人的幸福最终是有关系的，所以你拥有关于它的知识总是有意思的。

博学很有用。但有的人对学问本身没有兴趣，更看重个人利益。现在有许多大学生最要紧的是想出去留学，出去的人就基本不想回来了，并不想到国外学些东西，然后回来为国家做事。当然，中国应该做到国内大 学和外国大学在研究的设备、待遇等方面差不多相等，使学生感到没有必要到外国去念书。不过，现在还没有做到。

中国如何成为数学大国

２０年前，我在北京大学、南开大学和暨南大学讲演时，表达了自己内心的真诚愿望：希望在２１世纪看到中国成为数学大国。中国人的数学能力是不容怀疑的，中国将成为数学大国，我觉得也是不争的事实，但时间可能会有迟早，对此，我希望注意下列几点：

永远的人才项目

上海市：晨光计划、曙光计划、启明星计划、浦江计划、东方学者、领军人才、优秀学术带头人、上海千人计划、优秀青年科技学者、自然科学牡丹奖、科学技术进步奖、自然科学牡丹奖、青年科技英才奖、上海十大科技精英……

“光明大道”：优青 → 杰青 → 长江 → 院士

构建和谐社会视域下的大学生党员先进性教育研究

常建军(浙江工商大学 浙江 杭州 310018)

摘要:大学生党员作为党员中较高文化水平的群体,他们的先进性教育将影响到整个党的先进性教育的整体质量,也影响着党领导建设社会主义和谐社会能力的提高。只有不断改进对大学生党员的教育方式才能使大学生党员的先进性教育取得预期目的,为和谐社会的实现提供保障。

Abstract:The university student party member takes in the party member the high cultural level community, their advanced sex education will affect the entire party's advanced sex education overall quality, also affects the party to lead the build socialism harmonious society ability the enhancement. Only then improves unceasingly to the university student party member's educational mode can cause the university student party member's advanced sex education to obtain the anticipated goal, realizes for the harmonious society provides the safeguard.

关键词:和谐社会 大学生党员 先进性教育

Key words:Harmonious social university student party member advanced sex education

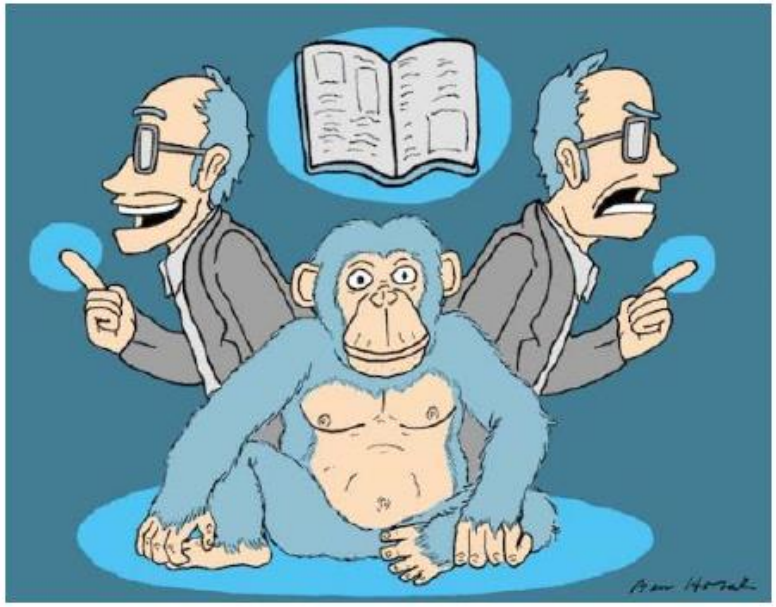
作者简介:常建军(1979--),男,汉族,山西忻州人,浙江工商大学工商管理学院教师,硕士研究生,主要从事高校思想政治教育工作以及伦理学研究

【中图分类号】G641 【文献标识码】A 【文章编号】1004-7069(2009)-08-0030-02

Nature编辑策划黑猩猩（chimpanzee）基因组在NATURE发表的经过。并特别描述了自己做编辑最窘的一件事：在辉煌的新闻发布会后，一位科学家走过去悄悄对她说：你们本期杂志上为黑猩猩基因组放了一张猩猩（orangutan，黄毛）的照片

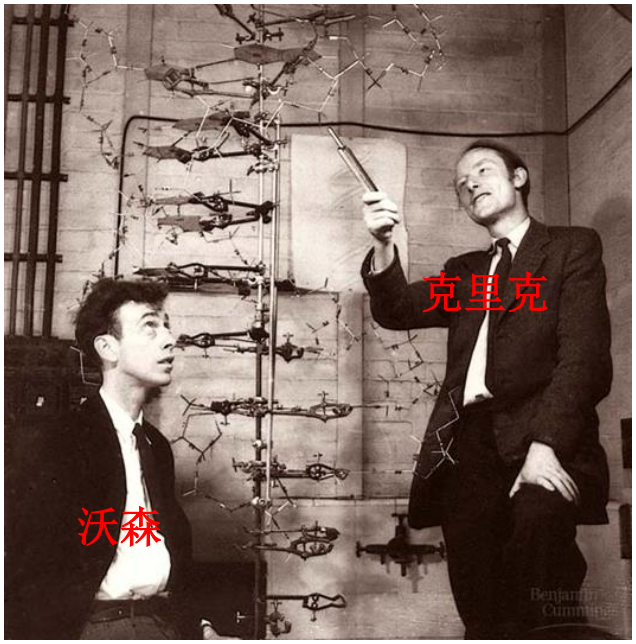
THE NATURE OF THE KNIGHT BUS

CHRIS GUNTER | RERUNSSTRESS | DECEMBER 2012



I may look like a standard soccer mom now, kids, but back in the day people regarded me as a cross between a rock-star goddess and Darth Vader. That's right, I was indeed an editor for *Nature* for nearly seven years, handling papers in genetics and genomics. There is a generally accepted hierarchy in

The Double Helix



equipment, and to Dr. G. E. R. Deacon and the captain and officers of R.R.S. *Discovery II* for their part in making the observations.

[1] Young, F. B., Gerrard, H., and Jevons, W., *Phil. Mag.*, **40**, 149 (1920).
[2] Longuet-Higgins, M. S., *Mon. Not. Roy. Astro. Soc., Geophys. Supp.*, **5**, 285 (1949).
[3] Von Arx, W. S., Woods Hole Papers in Phys. Oceanog. Meteor., **11** (3) (1950).
[4] Ekman, V. W., *Arkiv. Mat. Astron. Fysik.* (*Stockholm*), **2** (11) (1905).

MOLECULAR STRUCTURE OF NUCLEIC ACIDS

A Structure for Deoxyribose Nucleic Acid

WE wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.

A structure for nucleic acid has already been proposed by Pauling and Corey[1]. They kindly made their manuscript available to us in advance of publication. Their model consists of three intertwined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion, this structure is unsatisfactory for two reasons: (1) We believe that the material which gives the X-ray diagrams is the salt, not the free acid. Without the acidic hydrogen atoms it is not clear what forces would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other. (2) Some of the van der Waals distances appear to be too small.

Another three-chain structure has also been suggested by Fraser (in the press). In his model the phosphates are on the outside and the bases on the inside, linked together by hydrogen bonds. This structure as described is rather ill-defined, and for this reason we shall not comment on it.

This figure is purely diagrammatic. The two ribbons symbolize the two phosphate–sugar chains, and the horizontal rods the pairs of bases holding the chains together. The vertical line marks the fibre axis

We wish to put forward a radically different structure for the salt of deoxyribose nucleic acid. This structure has two helical chains each coiled round the same axis (see diagram). We have made the usual chemical assumptions, namely, that each chain consists of phosphate diester groups joining β-D-deoxyribofuranose residues with 3′,5′ linkages. The two chains (but not their bases) are related by a dyad perpendicular to the fibre axis. Both chains follow right-handed helices, but owing to the dyad the sequences of the atoms in the two chains run in opposite directions. Each chain loosely resembles Furberg's[2] model No. 1; that is, the bases are on the inside of the helix and the phosphates on the outside. The configuration of the sugar and the atoms near it is close to Furberg's 'standard configuration', the sugar being roughly perpendicular to the attached base. There is a residue on each chain every 3·4 A. in the *z*-direction. We have assumed an angle of 36° between adjacent residues in the same chain, so that the structure repeats after 10 residues on each chain, that is, after 34 A. The distance of a phosphorus atom from the fibre axis is 10 A. As the phosphates are on the outside, cations have easy access to them.

The structure is an open one, and its water content is rather high. At lower water contents we would expect the bases to tilt so that the structure could become more compact.

The novel feature of the structure is the manner in which the two chains are held together by the purine and pyrimidine bases. The planes of the bases are perpendicular to the fibre axis. They are joined together in pairs, a single base from one chain being hydrogen-bonded to a single base from the other chain, so that the two lie side by side with identical *z*-co-ordinates. One of the pair must be a purine and the other a pyrimidine for bonding to occur. The hydrogen bonds are made as follows: purine position 1 to pyrimidine position 1; purine position 6 to pyrimidine position 6.

If it is assumed that the bases only occur in the structure in the most plausible tautomeric forms (that is, with the keto rather than the enol configurations) it is found that only specific pairs of bases can bond together. These pairs are: adenine (purine) with thymine (pyrimidine), and guanine (purine) with cytosine (pyrimidine).

In other words, if an adenine forms one member of a pair, on either chain, then on these assumptions the other member must be thymine; similarly for guanine and cytosine. The sequence of bases on a single chain does not appear to be restricted in any way. However, if only specific pairs of bases can be formed, it follows that if the sequence of bases on one chain is given, then the sequence on the other chain is automatically determined.

It has been found experimentally[3,4] that the ratio of the amounts of adenine to thymine, and the ratio of guanine to cytosine, are always very close to unity for deoxyribose nucleic acid.

It is probably impossible to build this structure with a ribose sugar in place of the deoxyribose, as the extra oxygen atom would make too close a van der Waals contact.

The previously published X-ray data[5,6] on deoxyribose nucleic acid are insufficient for a rigorous test of our structure. So far as we can tell, it is roughly compatible with the experimental data, but it must be regarded as unproved until it has been checked against more exact results. Some of these are given in the following communications. We were not aware of the details of the results presented there when we devised our structure, which rests mainly though not entirely on published experimental data and stereochemical arguments.

It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material.

Full details of the structure, including the conditions assumed in building it, together with a set of co-ordinates for the atoms, will be published elsewhere.

We are much indebted to Dr. Jerry Donohue for constant advice and criticism, especially on interatomic distances. We have also been stimulated by a knowledge of the general nature of the unpublished experimental results and ideas of Dr. M. H. F. Wilkins, Dr. R. E. Franklin and their co-workers at King's College, London. One of us (J. D. W.) has been aided by a fellowship from the National Foundation for Infantile Paralysis.

J. D. WATSON
F. H. C. CRICK

Medical Research Council Unit for the Study of the Molecular Structure of Biological Systems,
Cavendish Laboratory, Cambridge.
April 2.

[1] Pauling, L., and Corey, R. B., *Nature*, **171**, 346 (1953); *Proc. U.S. Nat. Acad. Sci.*, **39**, 84 (1953).
[2] Furberg, S., *Acta Chem. Scand.*, **6**, 634 (1952).
[3] Chargaff, E., for references see Zamenhof, S., Brawerman, G., and Chargaff, E., *Biochim. et Biophys. Acta*, **9**, 402 (1952).
[4] Wyatt, G. R., *J. Gen. Physiol.*, **36**, 201 (1952).
[5] Astbury, W. T., Symp. Soc. Exp. Biol. 1, Nucleic Acid, 66 (Camb. Univ. Press, 1947).
[6] Wilkins, M. H. F., and Randall, J. T., *Biochim. et Biophys. Acta*, **10**, 192 (1953).

Molecular Structure of Deoxypentose Nucleic Acids

WHILE the biological properties of deoxypentose nucleic acid suggest a molecular structure containing great complexity, X-ray diffraction studies described here (cf. Astbury[1]) show the basic molecular configuration has great simplicity. The purpose of this communication is to describe, in a preliminary way, some of the experimental evidence for the polynucleotide chain configuration being helical, and existing in this form when in the natural state. A fuller account of the work will be published shortly.

The structure of deoxypentose nucleic acid is the same in all species (although the nitrogen base ratios alter considerably) in nucleoprotein, extracted or in cells, and in purified nucleate. The same linear group of polynucleotide chains may pack together parallel in different ways to give crystalline[1–3], semi-crystalline or paracrystalline material. In all cases the X-ray diffraction photograph consists of two regions, one determined largely by the regular spacing of nucleotides along the chain, and the other by the longer spacings of the chain configuration. The sequence of different nitrogen bases along the chain is not made visible.

Oriented paracrystalline deoxypentose nucleic acid ('structure *B*' in the following communication by Franklin and Gosling) gives a fibre diagram as shown in Fig. 1 (cf. ref. 4). Astbury suggested that the strong 3·4-A. reflexion corresponded to the internucleotide repeat along the fibre axis. The ~ 34 A. layer lines, however, are not due to a repeat of a polynucleotide composition, but to the chain configuration repeat, which causes strong diffraction as the nucleotide chains have higher density than the interstitial water. The absence of reflexions on or near the meridian immediately suggests a helical structure with axis parallel to fibre length.

Diffraction by Helices

It may be shown[5] (also Stokes, unpublished) that the intensity distribution in the diffraction pattern of a series of points equally spaced along a helix is given by the squares of Bessel functions. A uniform continuous helix gives a series of layer lines of spacing corresponding to the helix pitch, the intensity distribution along the *n*th layer line being proportional to the square of J_n, the *n*th order Bessel function. A straight line may be drawn approximately through the innermost maxima of each Bessel function and the origin. The angle this line makes with the equator is roughly equal to the angle between an element of the helix and the helix axis. If a unit repeats *n* times along the helix there will be a meridional reflexion (J_0^2) on the *n*th layer line. The helical configuration produces side-bands on this fundamental frequency, the effect[5] being to reproduce the intensity distribution about the origin around the new origin, on the *n*th layer line, corresponding to *C* in Fig. 2.

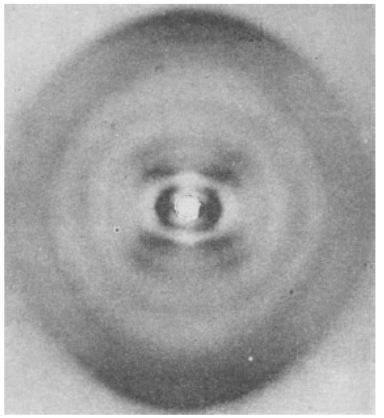


Fig. 1. Fibre diagram of deoxypentose nucleic acid from *B. coli*. Fibre axis vertical

We will now briefly analyse in physical terms some of the effects of the shape and size of the repeat unit or nucleotide on the diffraction pattern. First, if the nucleotide consists of a unit having circular symmetry about an axis parallel to the helix axis, the whole diffraction pattern is modified by the form factor of the nucleotide. Second, if the nucleotide consists of a series of points on a radius at right-angles to the helix axis, the phases of radiation scattered by the helices of different diameter passing through each point are the same. Summation of the corresponding Bessel functions gives reinforcement for the inner-

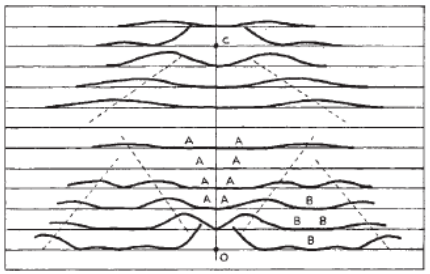
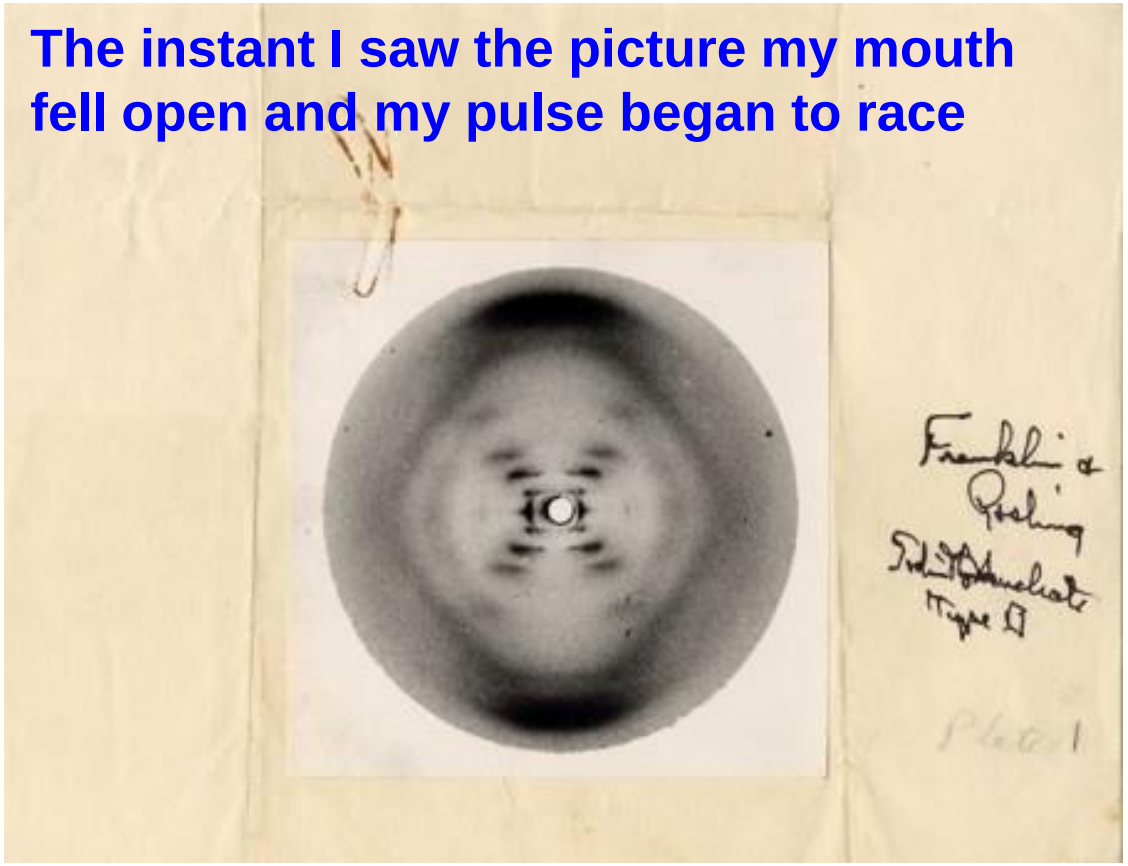


Fig. 2. Diffraction pattern of system of helices corresponding to structure of deoxypentose nucleic acid. The squares of Bessel functions are plotted about O on the equator and on the first, second, third and fifth layer lines for half of the nucleotide mass at 20 A. diameter and remainder distributed along a radius, the mass at a given radius being proportional to the radius. About *C* on the tenth layer line similar functions are plotted for an outer diameter of 12 A.

We are much indebted to Dr. Jerry Donohue for constant advice and criticism, especially on inter-atomic distances. We have also been stimulated by a knowledge of the general nature of the unpublished experimental results and ideas of Dr. M. H. F. Wilkins, Dr. R. E. Franklin and their co-workers at

The instant I saw the picture my mouth fell open and my pulse began to race



37岁去世

石墨烯的发现

Andre Geim (2010)

Born: 1958, Sochi, Russia

Affiliation at the time of the award: University of Manchester, Manchester, United Kingdom

Prize motivation: "for groundbreaking experiments regarding the two-dimensional material **graphene**“

Field: Physics

努力开创全新而未知的领域，但用有面对巨大困难和挑战的充分准备，不轻易放弃！

汇报提纲

- 我们的科研环境
- **一流研究与一流研究生**
- 论文写作
- 审稿意见与修改

科学研究的三重境界

一流：To be the first

二流：To be the best

三流：To be the most

曾经看到的一项儿童调研：你的理想是什么？

- 长大要当明星（50%）
- 长大后挣大钱（20%）
- 长大后当画家（20%）
- 长大后当科学家（1%）
- 长大后娶美女（1%）
- 其他（8%）

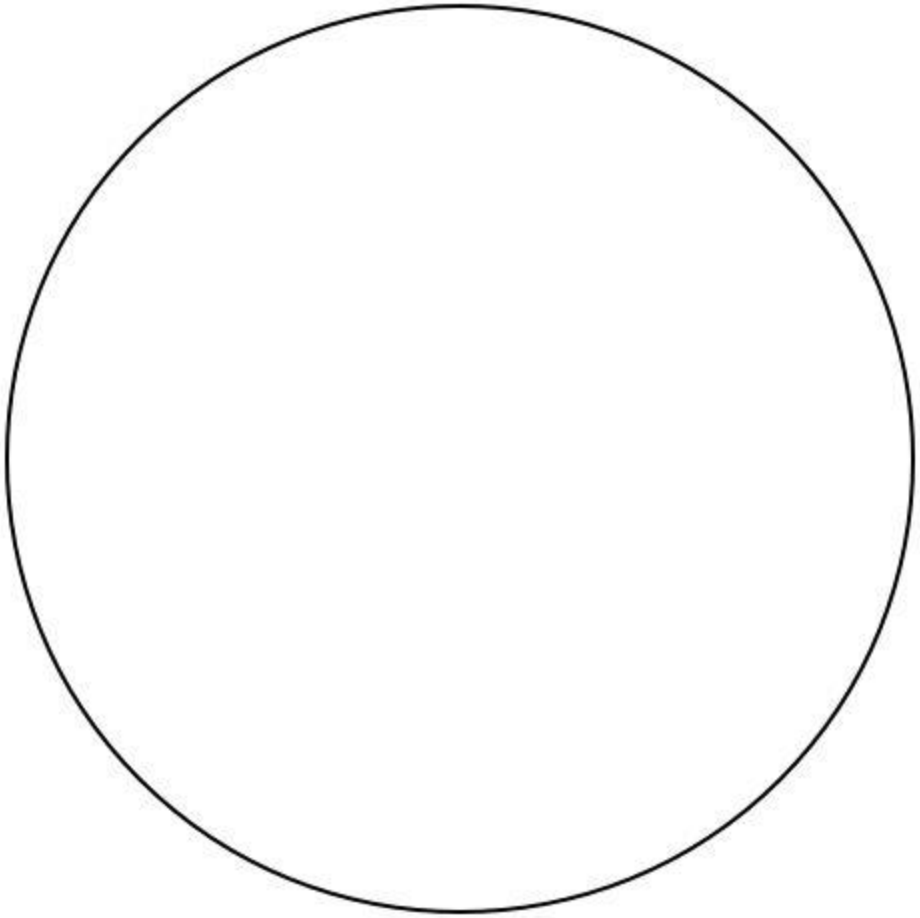

是自己进步的标志
学习上每一个困难的突破都是自己更高的起点
紧紧抓住每一个5分钟
作业要专注投入 课堂要紧跟老师 错题要多次回顾
百日拼搏全力以赴 梦想和喜悦从二中飞扬

学习应该是快乐的

风萧萧兮易水寒…

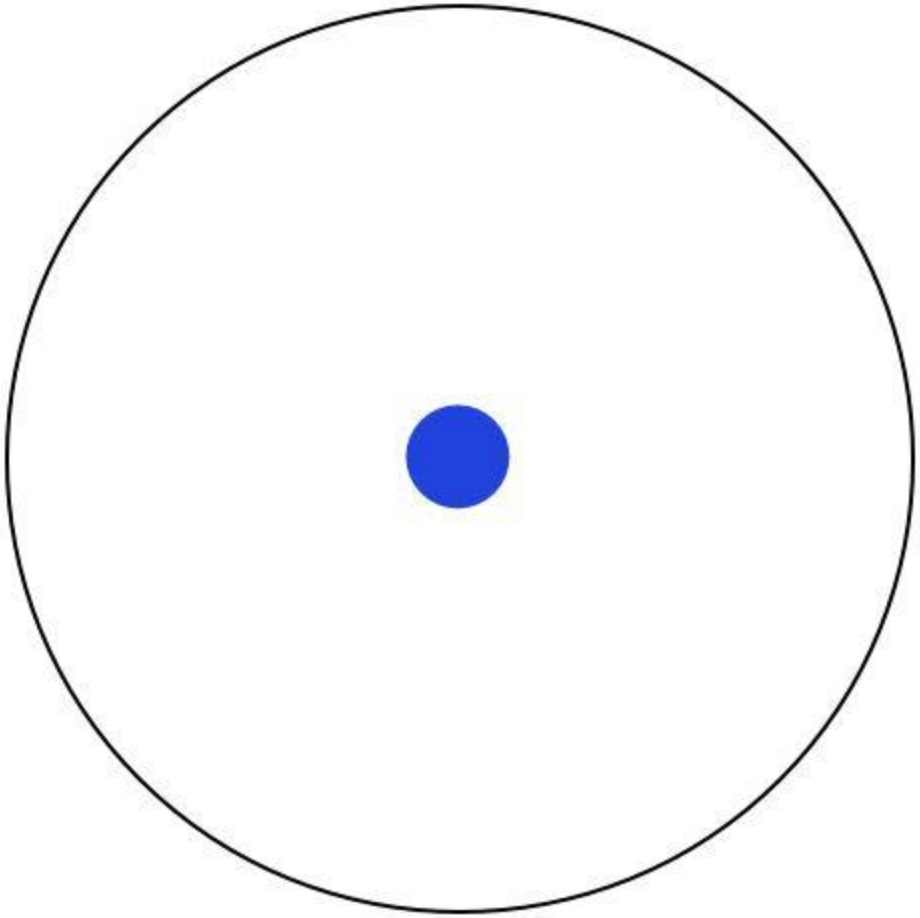
标准产品？

假设人类所有的知识，就是一个圆。圆的内部代表已知，圆的外部代表未知。

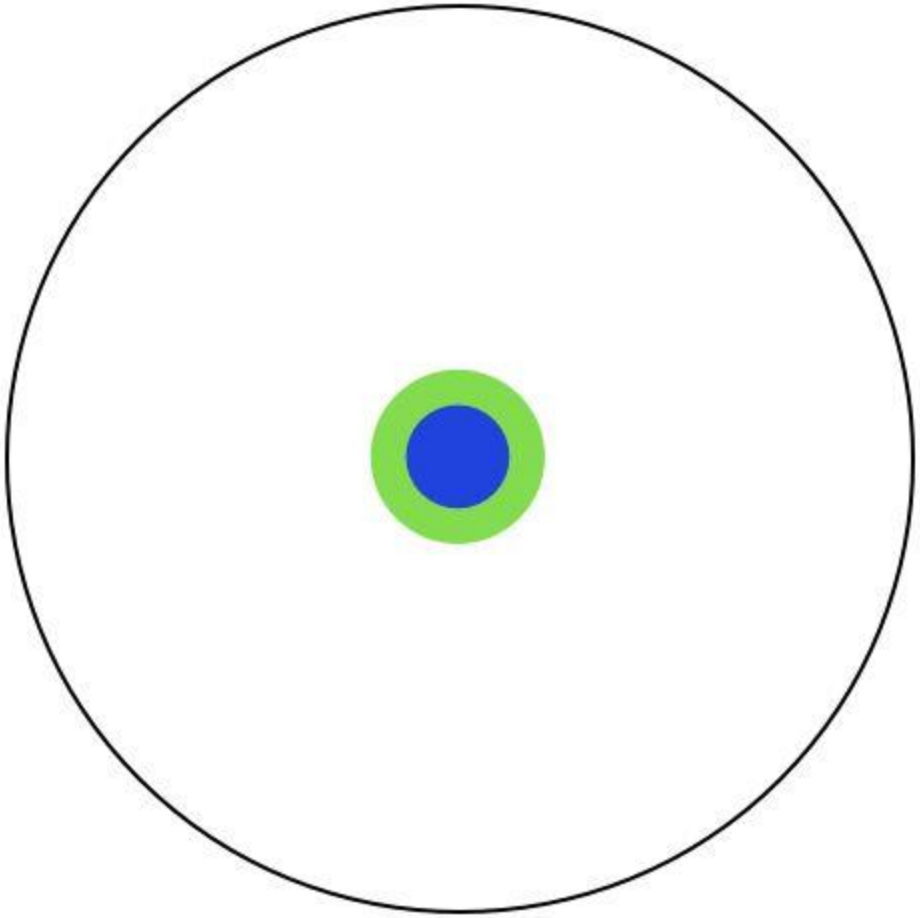


原创于美国犹他大学Matt Might教授

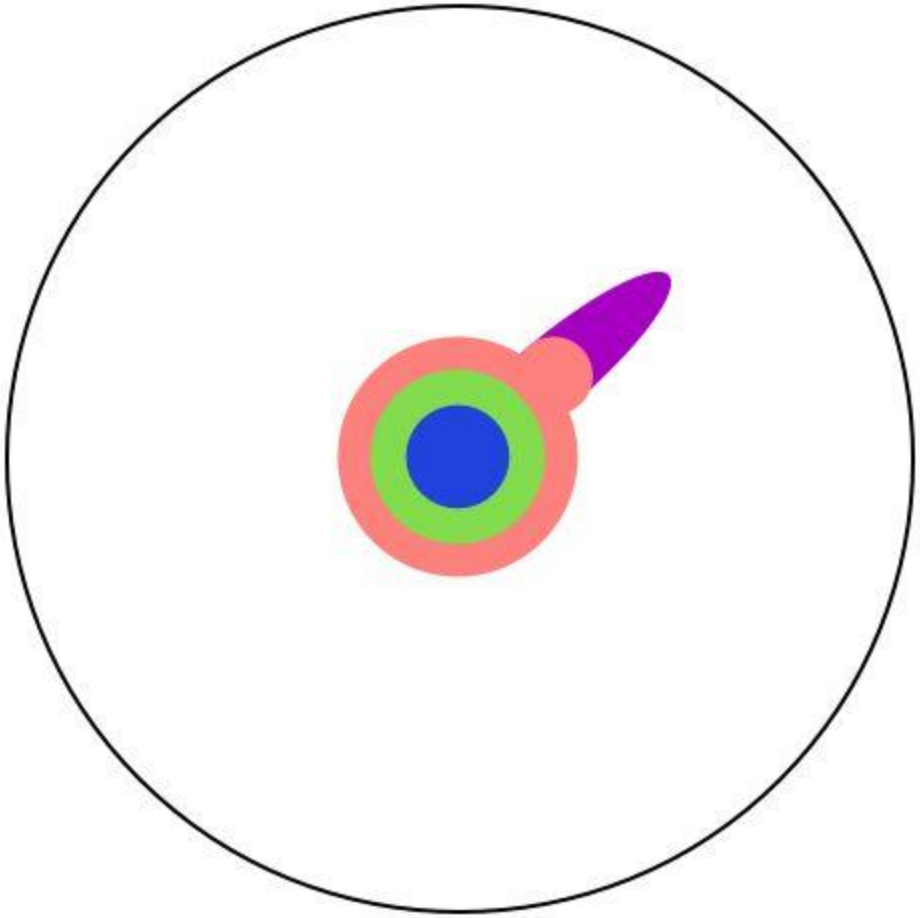
读完小学，你有了一些最基本的知识。



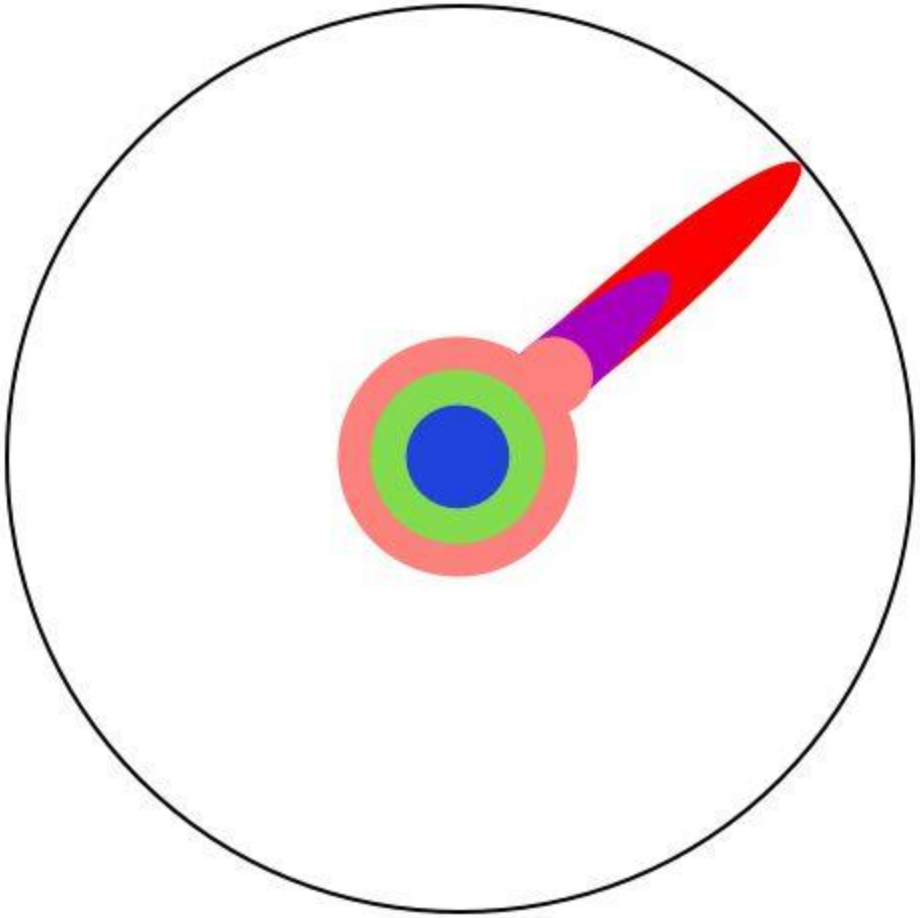
读完中学，你的知识又多了一点。



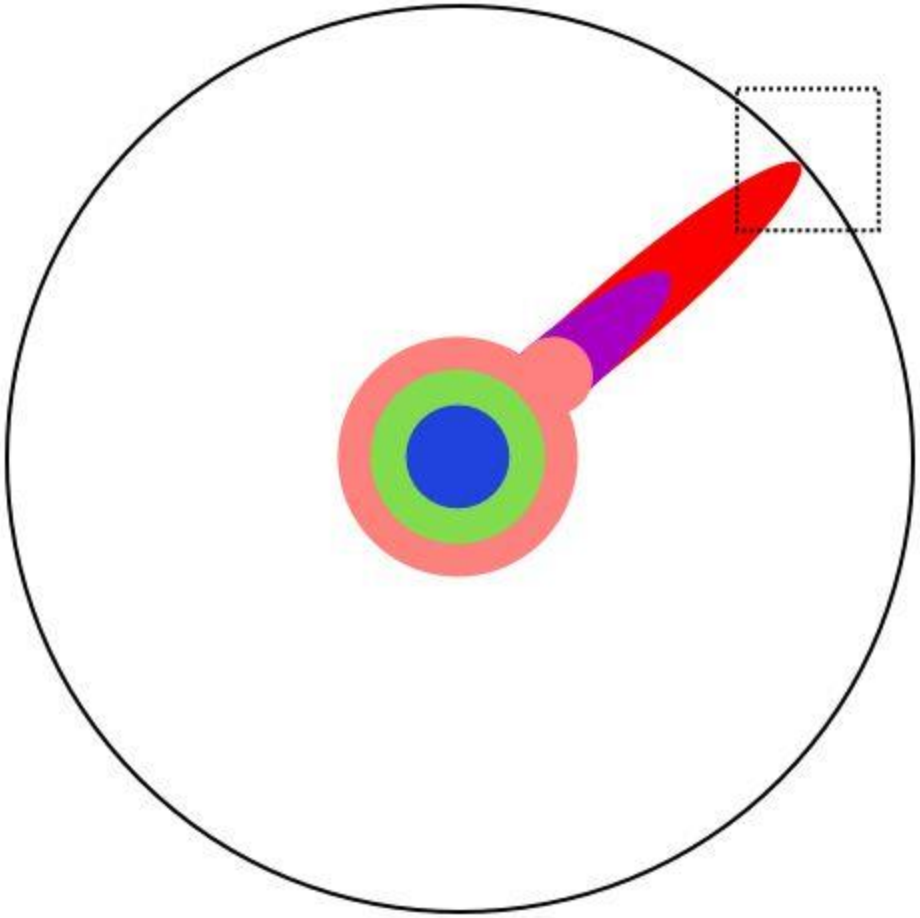
读完本科，你不仅有了更多的知识，而且还有了一个专业方向。



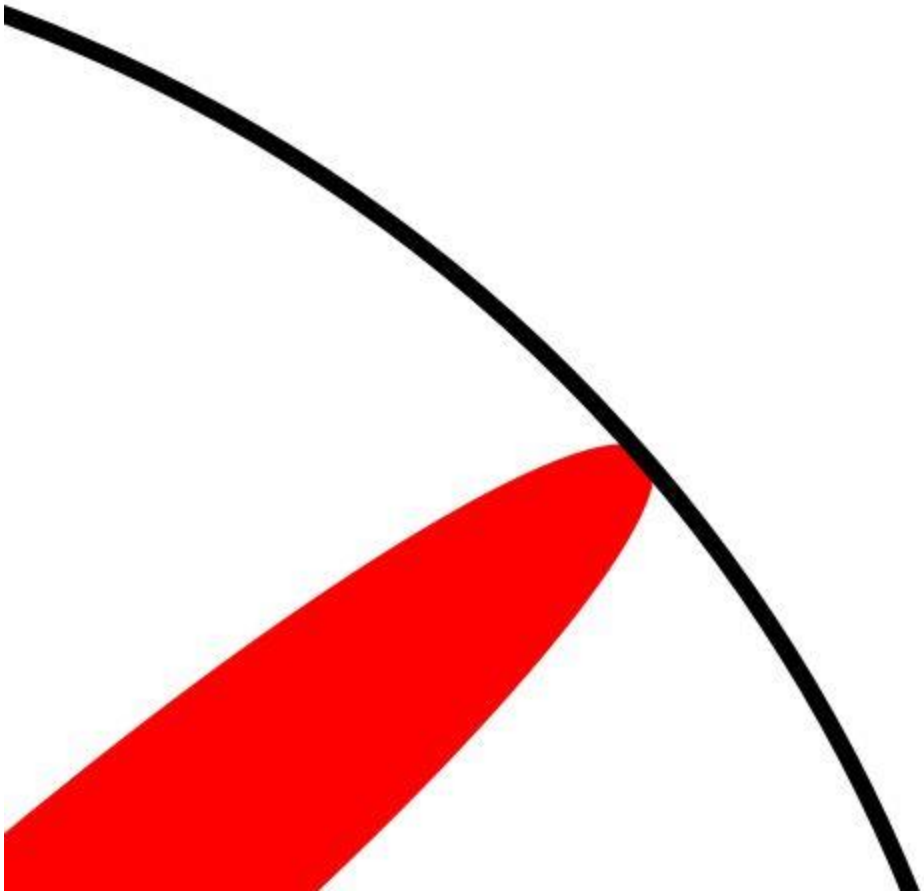
进入研究生阶段，你大量阅读文献，接触到本专业的最前沿。



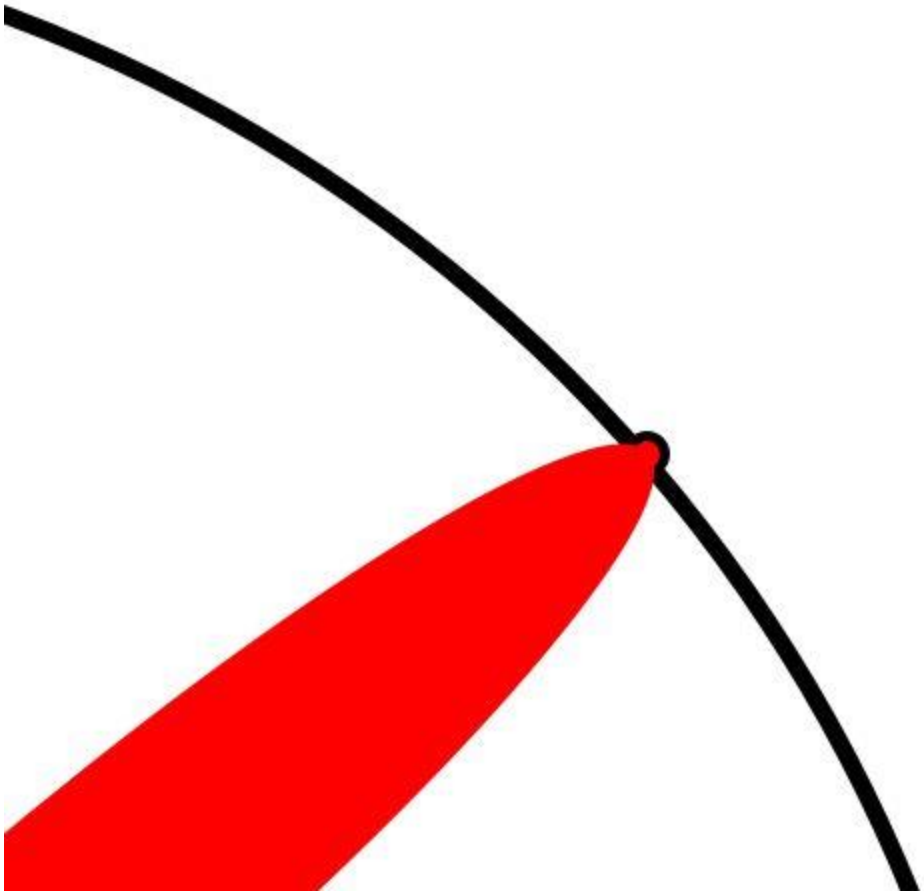
你选择边界上的一个点，也就是一个非常专门的问题，作为自己的主攻方向。



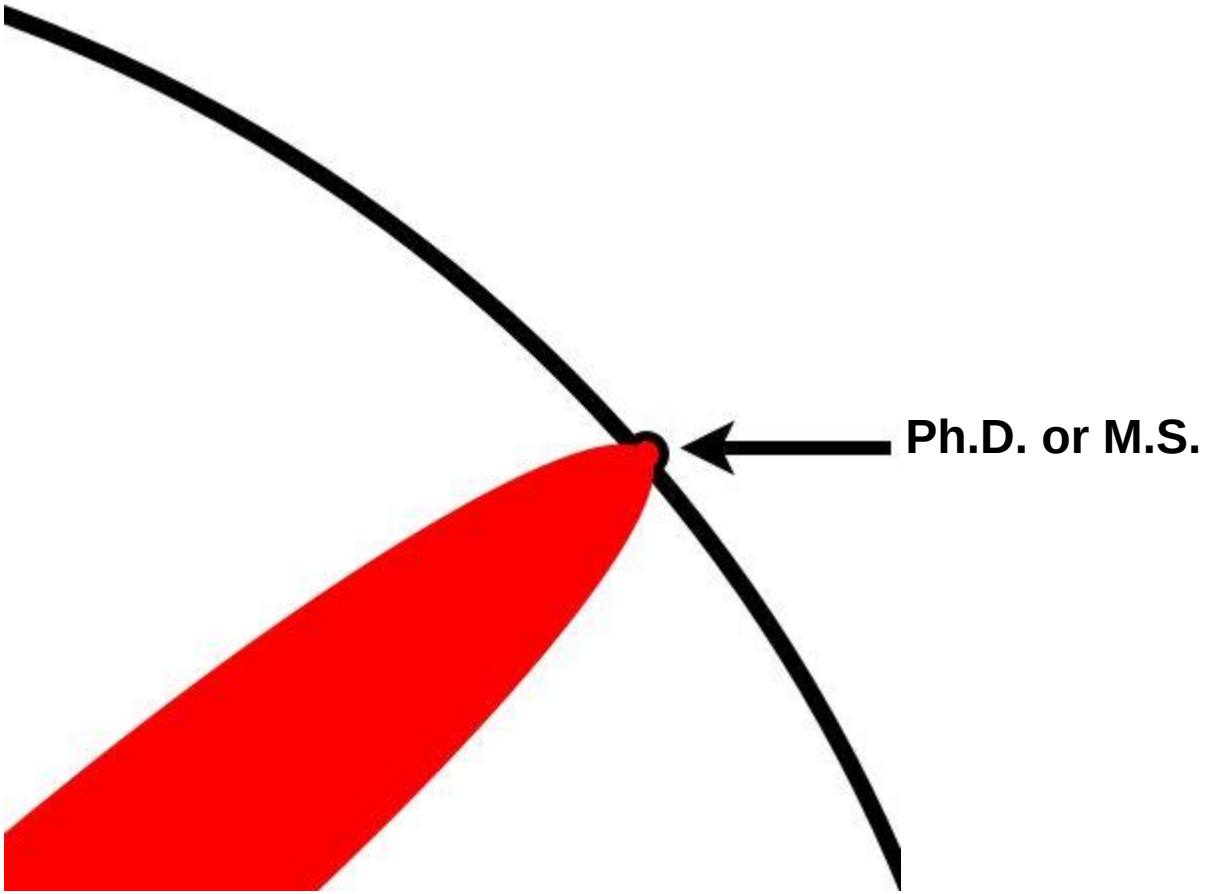
你在这个点上苦苦思索，也许需要好几年。



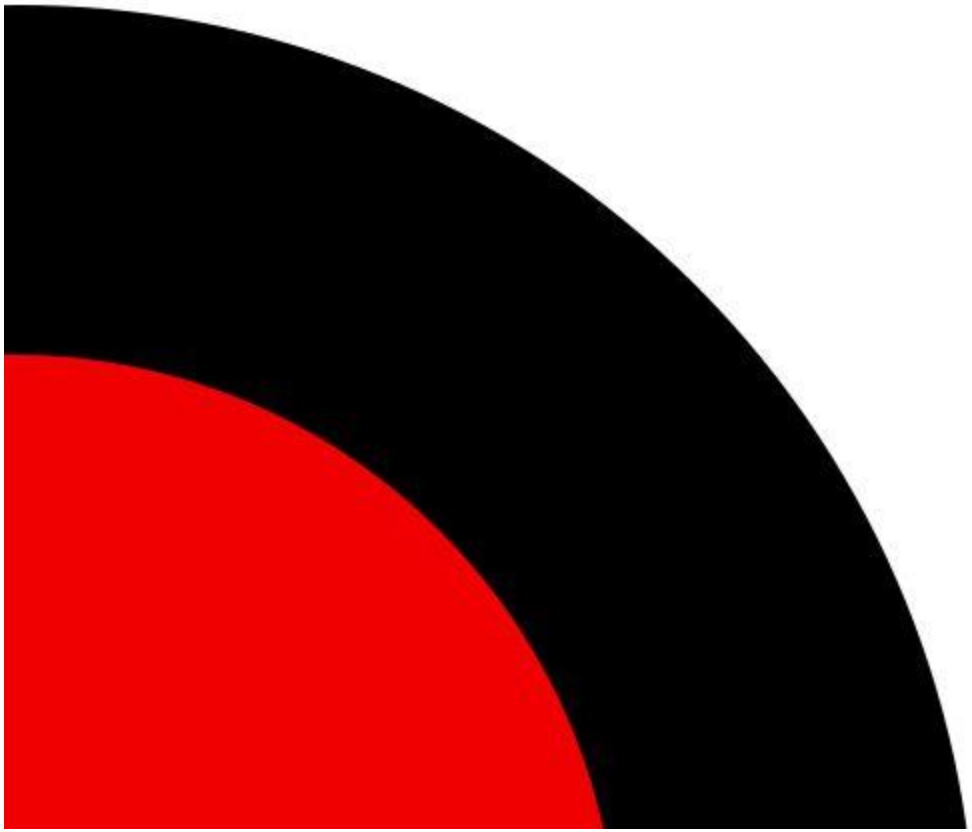
终于有一天，你突破了这个点。



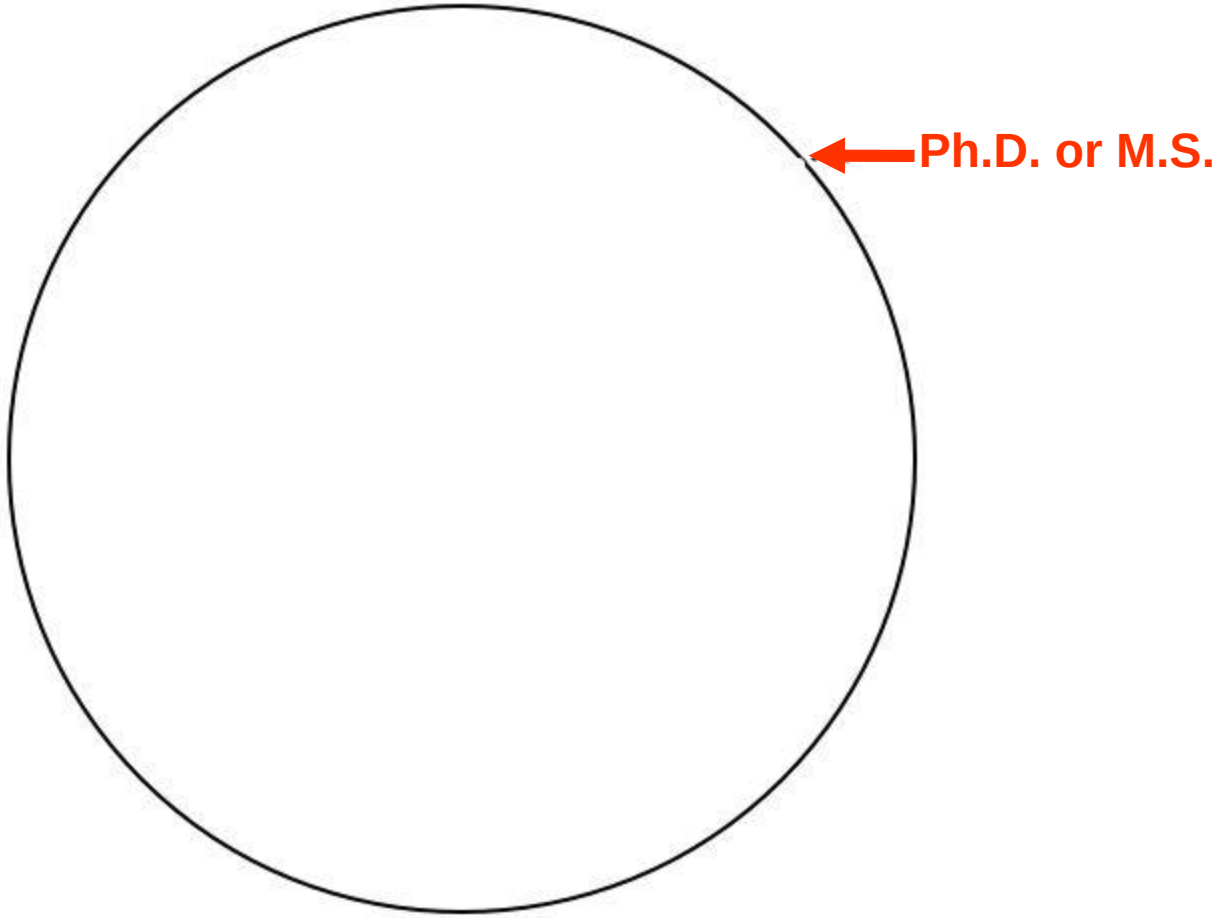
你把人类的知识向前推进了一步，这时你就研究生毕业了。



现在你就是最前沿，其他人都在你身后。



但是，不要陶醉在这个点上，不要把整张图的样子忘了。



研究生与本科生的区别

本科生创造性地学习知识

研究生学习创造知识

快乐的开始

鼓励的力量

放手让学生想、做、写，他们可以做到！

汇报提纲

- 我们的科研环境
- 一流研究与一流研究生
- 论文写作
- 审稿意见与修改

Doing research is fun;

writing about the research is not.

A Naturalist's life would be happy one if he had only to observe and never to write.

Charles Darwin

论文写作的粗浅理解

References

- “How to Write a Paper”, Mike Ashby, University of Cambridge, 6rd Edition, April 2005.
- Whitesides’ Group: Writing a paper, *Advanced Materials* 2004, 16, 1375-1377.
- How to write a lot, Paul J. Silvia, the American Psychological Association, 2007
- Mastering your PhD, Patricia Gosling and Bart Noordam, Springer

制定一个较高的目标

取乎其上，得乎其中；
取乎其中，得乎其下；
取乎其下，则无所得矣。 ---《论语》

求其上，得其中；求其中，得其下；求其下，必败。
---《孙子兵法》

取法于上，仅得为中；取法于中，故为其下。
---唐太宗《帝范》

学其上，仅得其中；学其中，斯为下矣。
---严羽《沧浪诗话》

写作流程

（1）论文提纲，这个非常重要，不仅可以大大节省时间，更能提高论文的质量，特别是行文的逻辑性。
（2）按照提纲总结组织好所有图、表、示意图等，这样基本上就知道这篇论文的重点和核心思想。
（3）写绪论（introduction），这是论文的关键部分。
（4）接下来是实验部分（experimental），比较容易，相对来说不用花很多时间。
（5）再接下来是实验结果与讨论（results and discussion），论文的主体部分，实际上就是按图说话。
（6）总结概括全文主要结论（conclusion）。
（7）致谢（acknowledgement）与参考文献（references）。
（8）对步骤2-7反复修改提炼，完全满意后撰写论文摘要（abstract）。
（9）最后确定论文的标题（title），是画龙点睛的部分，要仔细斟酌。

论文提纲

- 写提纲前必须对本工作相关的研究现状、参考文献以及本工作的创新之处（俗话说卖点在哪里？）非常了解，然后根据已有的实验数据撰写提纲。
- 提纲主要包括绪论、实验部分、结果与讨论、总结、致谢、参考文献等。
- 针对每个部分再详细展开，比如几个段落，每个段落如何写。可以用中文，也可以用英文；可以是完整的句子，也可以只是几个关键词。

如何总结图表

- 一般的顺序是先合成部分，然后结构表征，最后是功能与应用。
- 内容相似的数据放在一起，比如对于具有规则结构的复合材料，可以把SEM、TEM、AFM、 XRD等表征结果合成一张图，把其光学性能、电学性能等合成另一种图。
- 对于示意图，一般放在最前面向读者简要说明本方法、本研究的基本思想，或者放在最后面起到总结概括作用。示意图要尽量画得简单、清楚，但同时要美观舒适。
- 图表中的文字、照片标尺和箭头等要标注明显，让人看了一目了然，尽量少用文字。对图的文字解释部分，基本采用的格式是第一句话总结这个图的内容，后面再分别介绍每张子图的信息，介绍尽量具体，希望达到的效果是即使读者不看论文讨论部分，只看图表及其说明就大概知道本论文的主要内容。

绪论部分

- 全文的核心，通过绪论让读者了解你为什么要做这个工作。
- 对于通讯类论文（communication或letter），绪论不要太长，基本上两段；第一段阐述该领域研究的重要性和目前存在的主要问题，这个问题不解决会有什么后果以及解决问题的迫切性；第二段阐述为了解决这个问题，别的研究组做了那些探讨，为什么没有成功，然后引出自己的工作，同时概括说明这个工作如何解决提到的问题。
- 对于较长的研究论文（full article），绪论要写得更具体，最少两段，对上面的信息进行展开讨论。绪论写清楚了，一方面自己进一步确定后面的结果与讨论部分那些必须重点阐述，哪些只需简单带过；另一方面读者马上抓住了这个工作的重要性，便于后面的理解，从而留下更深的印象。

- 不管绪论还是其他部分，严禁直接复制参考文献，决不允许整句甚至整段的抄写其他论文。如果想表达跟某论文某句话相同的意思，必须用自己的语言写出来。
- 在科学研究上的大胆创新和充分尊重前人成果，是一个辩证的统一。科学研究贵在创新，没有创新科学就不能前进与发展。但是科学又是连续性的，所有的创新又必然建立在前人成果的基础之上。
- 尊重前人已取得的成果，首先要做到在自己的研究论文中充分引用前人已经发表的有关论文，这样做的目的首先是充分尊重前人成果。同时也让读者全面了解有关问题的历史情况和发展现状，得以对论文中的创新之处做出适当的评价。在使用“领先”，“首次”等词时，务必十分慎重。

Nature/*Science*的独特风格

只适用于Science和Nature及其子刊，请在其他期刊中使用。

Nature has always been a source of inspiration for technical developments, but only in recent years have materials scientists started to consider the complex hierarchical structure of natural materials as a model for the development of new types of high-performance engineering materials. It is by no means obvious how the lessons learned from biological materials can be applied to the design of new engineering materials. The reasons for this difficulty are some striking differences in the design strategies that are common in engineering and the ways in which natural materials are constructed. For instance, the helical assembly……

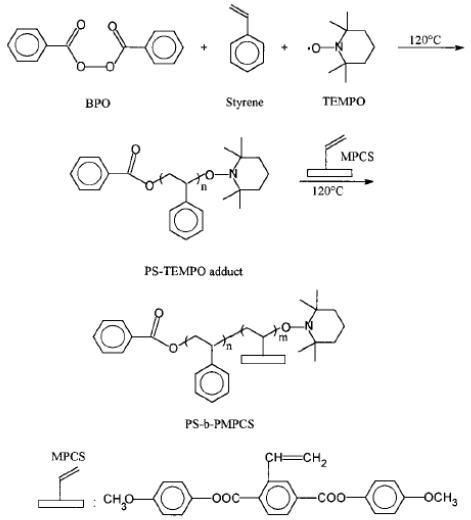
实验部分

- 基本包括以下信息：（1）化学试剂和原料，即从哪里购买，纯度如何，使用前是否经过纯化或别的处理，如何处理。（2）实验步骤，按照先后顺序阐述，实验条件等要清楚明了。（3）仪器与设备，说明所使用表征工具的生产公司、型号等。对于不常用或者大多数读者不熟悉的仪器，要简单阐述其基本原理并给出参考文献。
- 总结来说，实验部分越具体越好，尽量给出更多细节，方便同行重复。

结果与讨论部分

- 思路一定要清晰，重点突出。
- 一般每个段乱的第一句要总结概括本段主要内容，后面再根据相关图表进行陈述支持。
- 每个段落不要太长，对于中国研究者写英文论文，避免使用太长的句式。主动句和被动句搭配使用，多使用被动句。

Scheme 1. Synthesis Route of the Coil−Rod Diblock Copolymer Poly(styrene-*block*-(2,5-bis[4-mathoxyphenyl]-oxycarbonyl)styrene) (PS-*b*-PMPCS)



on how these microscopic parameters were affected by the copolymer concentration.

Experimental Section

Sample Preparation. In PMPCS, the mesogenic units are directly attached to the chain backbone at the waist.[18] MPCS was prepared by an established method.[19] PS-*b*-PMPCS was synthesized by TEMPO mediated radical polymerization, as shown in Scheme 1.[20] Freshly distilled styrene, benzoyl peroxide (BPO), and TEMPO were charged into a polymerization tube. After being degassed with 3 freeze−thaw cycles, the tube was sealed off under vacuum. The reaction mixture was kept at 90 °C for 3 h to ensure a complete decomposition of BPO. The reaction was carried at 120 °C for 15 h. The PS-TEMPO adduct was precipitated in methanol and dried overnight in a vacuum. Using *p*-xylene as solvent and PS-TEMPO adduct as initiator, we were able to polymerize MPCS at 120 °C. The solution was clear and colorless during the polymerization. The diblock copolymer was harvested in methanol and dried overnight in a vacuum. The unreacted substances was removed by a cyclohexane extraction.

The PS initiator has a number-average molar mass of 52 000 g/mol and a polydispersity index of 1.34 determined by size exclusion chromatography. The copolymer composition was attained by nuclear magnetic resonance (^{1}H NMR, DPX300) with dichloromethane-d_2 as solvent. The block lengths were estimated from the intensity ratio of methoxy (δ = 3.3−3.8) and the aromatic (δ = 6.3−7.2) groups. The diblock copolymer used in this work, on average, contained 520 styrene and 119 MPCS repeating units and had a polydispersity index of ~1.3 estimated from the line width measured in dynamic LLS. A stock solution (5.00×10^{-4} g/mL) was prepared by dissolving PS-*b*-PMPCS in *p*-xylene at 110 °C. A subsequent dilution resulted in a series of solutions with different designed concentrations. Before being cooled to 25 °C, the dilute solutions were kept at 110 °C to ensure complete dissolution. The solutions were left to stand at 25 °C for 24 h before the LLS measurement. All the solutions were clarified by a 0.45 μm Millipore LCR filter to remove dust.

Laser Light Scattering. In static LLS,[21] we were able to obtain the weight-average molar mass (M_w) and the *z*-average root-mean-square radius of gyration ($\langle R_g^2\rangle^{1/2}$ or written as $\langle R_g\rangle$) of the scattering objects in a very dilute dispersion from the angular dependence of the excess absolute scattering intensity, known as the Rayleigh ratio $R_{vv}(q)$, where q is the scattering vector. The specific refractive index increment (dn/dC) was determined by a novel and precise differential refractometer.[22] The refractive index increments of PS and PMPCS in *p*-xylene are nearly identical ($dn/dC = 0.112 \pm 0.002$ mL/g at 25 °C and 532 nm). Therefore, we were able to determine the true weight-average molar mass of the self-assembled PS-*b*-PMPCS nanostructures. In dynamic LLS,[23] the cumulants analysis of the measured intensity−intensity time correlation function of a narrowly distributed scattering object could lead to an accurate average line width ($\langle\Gamma\rangle$). For a pure diffusive relaxation, Γ is related to the translational diffusion coefficient D by $D = (\Gamma/q^2)_{q\to 0,c\to 0}$ or the hydrodynamic radius R_h by $R_h = k_BT/(6\pi\eta D)$ with k_B, η, and T being the Boltzmann constant, solvent viscosity, and the absolute temperature, respectively. The details of our LLS instrumentation can be found elsewhere.[24] In this study, the solutions were so dilute (~10^{-5} g/mL) that the extrapolation of $C \to 0$ was not necessary.

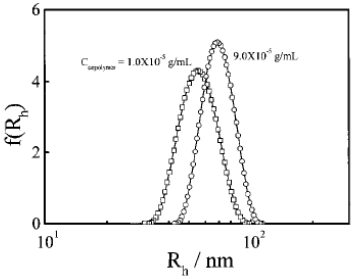


Figure 1. Concentration dependence of hydrodynamic radius distribution $f(R_h)$ of self-assembled PS-*b*-PMPCS nanostructures in *p*-xylene at 25 °C.

Results and Discussion

The size distribution in Figure 1 shows a clear self-assembly of PS-*b*-PMPCS in *p*-xylene at 25 °C because the hydrodynamic radius in the range 30−100 nm is larger than that of individual chains. These self-assembled PS-*b*-PMPCS nanostructures are narrowly distributed with a relative line width ($\mu_2/\langle\Gamma\rangle^2$) no more than 0.03, implying that they are well-defined, presumably micelle-like core−shell nanostructures with the insoluble PMPCS and soluble PS blocks respectively as the core and shell. The size of the nanostructures increases with the copolymer concentration. The self-assembly can be better viewed in terms of the change of the average molar mass of such formed nanostructures.

Figure 2 shows that the weight average molar mass of the nanostructures increases with the copolymer concentration in the range $(1.0-9.0) \times 10^{-5}$ g/mL, different from the self-assembly of poly(styrene-*block*-3-hydroxymethylsilacyclobutane) in toluene or methanol reported by Yamaoka et al.;[25] namely, they found that the size was nearly independent of the copolymer concentration in the 0.5−3.0 wt % range. It is worth noting that it is not easy to study the concentration dependence of the self-assembly of diblock copolymer chains in an extremely dilute solution. Most of the reports in the literature

(21) Chu, B. *Laser light scattering*, 2nd ed.; Academic Press: New York, 1991.

(22) Wu, C.; Xia, K.-Q. *Rev. Sci. Instrum.* **1994**, *65*, 587−590.

(23) Berne, B. J.; Pecora, R. *Dynamic Light Scattering*; Plenum Press: New York, 1976.

(24) Wu, C.; Zhou, S. Q. *Macromolecules* **1995**, *28*, 8381−8387. Wu, C.; Zhou, S. Q. *Macromolecule* **1996**, *29*, 1574−1578.

(25) Matsumoto, K.; Miyagawa, K.; Matsuoka, H.; Yamaoka, H. *Polym. J.* **1999**, *31*, 609−613.

一个
例子

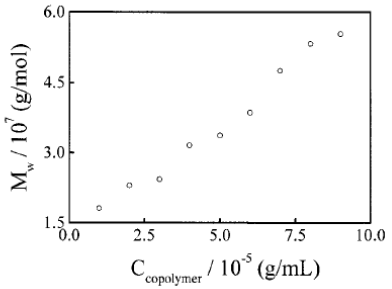


Figure 2. Concentration dependence of weight-average molar mass (M_w) of self-assembled PS-*b*-PMPCS nanostructures in *p*-xylene at 25 °C.

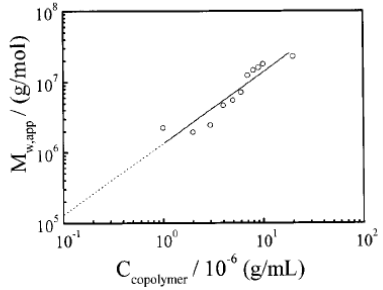


Figure 3. Concentration dependence of apparent weight-average molar mass ($M_{w,app}$) of PS-*b*-PMPCS in an extreme dilute region. The extrapolation leads to an estimate of critical association concentration of PS-*b*-PMPCS in *p*-xylene at 25 °C.

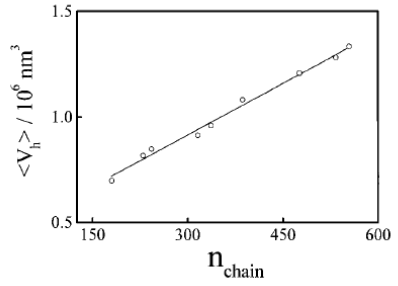


Figure 4. Association chain number (n_{chain}) dependence of average hydrodynamic volume ($\langle V_h \rangle$) of self-assembled PS-*b*-PMPCS nanostructures in *p*-xylene at 25 °C.

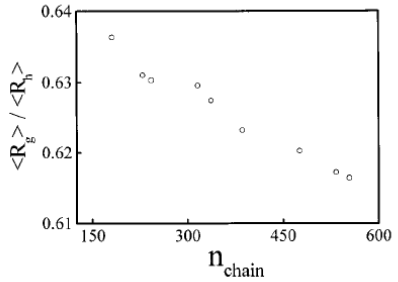


Figure 5. Association chain number (n_{chain}) dependence of $\langle R_g \rangle / \langle R_h \rangle$ of self-assembled PS-*b*-PMPCS nanostructures in *p*-xylene at 25 °C, where $\langle R_g \rangle$ and $\langle R_h \rangle$ are average radius of gyration and average hydrodynamic radius, respectively.

were limited to the range of $> 10^{-4}$ g/mL. Moreover, the critical association concentration (CAC) of diblock copolymers in a selective solvent is usually so low that its determination is extremely difficult, if not impossible.

Figure 3 shows that the extrapolation of the apparent weight-average molar mass of PS-*b*-PMPCS to that of individual copolymer chains (~10^5 g/mol) reveals that PS-*b*-PMPCS in *p*-xylene has a CAC lower than ~10^{-7} g/mL at 25 °C. This method of estimating CAC was previously used by Zhou et al.[26] and Iyama et al.[27] Therefore, when working in the range 10^{-5}–10^{-4} g/mL, we could neglect the effect of this small CAC in all the LLS calculations. From the weight-average molar masses of the nanostructures and individual copolymer chains, we were able to calculate the average association number of the chains inside each nanostructure.

Figure 4 shows that the average hydrodynamic volume ($\langle V_h \rangle$) of the PS-*b*-PMPCS nanostructures increases linearly with n_{chain}. The average chain density estimated from the slope of "$\langle V_h \rangle$ vs n_{chain}" is ~0.1 g/cm^3, much lower than that of the corresponding bulk copolymer, but higher than the copolymer chains swollen in a good solvent. This density probably reflects the packing of the insoluble PMPCS blocks in the core and the stretching of the swollen PS blocks in the shell. The questions are (1) in which way the copolymer chains are self-assembled into the core and the shell and (2) how the core size and the shell thickness are influenced by the copolymer concentration. The chain density distribution and conformation change can also be viewed in terms of the ratio of the radius of gyration to the hydrodynamic radius.

Figure 5 shows that $\langle R_g \rangle / \langle R_h \rangle$ decreases when more chains are assembled together. This is because $\langle R_h \rangle$ increases faster than $\langle R_g \rangle$. It is known that for a random coil chain in a good solvent, $\langle R_g \rangle / \langle R_h \rangle \sim 1.5$, and for a uniform sphere, $\langle R_g \rangle / \langle R_h \rangle \sim 0.775$. Figure 5 shows that $\langle R_g \rangle / \langle R_h \rangle < 0.775$, indicating that the center of the nanostructure has a higher density, which agrees with the presumed core−shell nanostructure. Previously, a similar low $\langle R_g \rangle / \langle R_h \rangle$ ratio was also observed for other self-assembled structures,[28] the adsorption of polymer chains on colloid particles,[29] and the molten globule state of a collapsed single homopolymer chain.[30] Unfortunately, this low value of $\langle R_g \rangle / \langle R_h \rangle$ has not been properly explained and attributed to the self-assembly of diblock copolymers in solution.

The core−shell nanostructure can be described by two concentric spheres.[31] The center is made of the insoluble blocks, while the outer corona consists of the soluble blocks swollen by solvent. For the first approximation, one can assume that the core and the shell have different, but uniform densities (ρ_c and ρ_s). Noolandi et al.[32] and Leibler et al.[33] used it to model

(26) Zhou, Z.; Chu, B.; Peiffer, D. G. *Macromolecules* **1993**, *26*, 1876−1883.
(27) Iyama, K.; Nose, T. *Polymer* **1998**, *39*, 651−658.
(28) Moffitt, M.; Yu, Y.; Nguyen, D.; Graziano, V.; Schneider, D. K.; Eisenberg, A. *Macromolecules* **1998**, *31*, 2190−2197.
(29) Wu, C.; Gao, J. *Macromolecules* **1999**, *32*, 1704−1705.
(30) Wu, C.; Wang, X. *Phys. Rev. Lett.* **1998**, *80*, 4092−4094.
(31) de Gennes, P.-G. In *Solid State Physics*; Liebert, L., Ed.; Academic: New York, 1978; Suppl. 14.
(32) Noolandi, J.; Hong, K. M. *Macromolecules* **1983**, *16*, 1443−1448.
(33) Leibler, L.; Orland, H.; Wheeler, J. C. *J. Chem. Phys.* **1983**, *79*, 3550−3557.

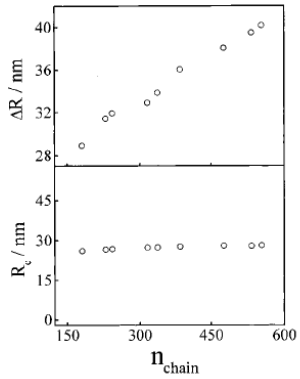


Figure 6. Association chain number (n_{chain}) dependence of the average radius of the PMPCS core (R_c) and average thickness of the PS shell (ΔR) of the self-assembled PS-*b*-PMPCS nanostructure at 25 °C.

the self-assembly of diblock copolymers in dilute solution and got some results in good agreement with the experimental data. Normally, neutron scattering is required to measure the core radius (R_c) and the shell thickness (ΔR). In the following, we like to show that a combination of static and dynamic LLS can also be used to estimate R_c and ΔR from the ratio of $\langle R_g \rangle / \langle R_h \rangle$. In the core−shell model, the masses of the core (M_c) and the shell (M_s) are

$$M_c = {}^4/_3 \pi \rho_c R_c^3 \quad \text{and} \quad M_s = {}^4/_3 \pi \rho_s (R^3 - R_c^3) \qquad (1)$$

where R is the radius of the outside sphere. Substituting eq 1 into the definition of R_g for a sphere, we obtain:

$$R_g^2 = \frac{\int_v \rho(r) r^2 \, dv}{\int_v \rho(r) \, dv} = \frac{\int_0^{R_c} 4\pi\rho_c r^4 \, dr + \int_{R_c}^{R} 4\pi\rho_s r^4 \, dr}{M_c + M_s} = \frac{3[M_c R_c^2 R^3 - (M_c + M_s) R_c^5 + M_s R^5]}{5(M_c + M_s)(R^3 - R_c^3)} \qquad (2)$$

Setting the mass ratio $M_c/M_s = A$ and the radius ratio $R_c/R = x$, we can rewrite eq 2 as:

$$R_g^2 = \frac{3R^2[Ax^2 - (1 + A)x^5 + 1]}{5(1 + A)(1 - x^3)} \qquad (3)$$

Replacing R with R_h, we have

$$\frac{R_g}{R_h} = \left\{ \frac{3[Ax^2 - (1 + A)x^5 + 1]}{5(1 + A)(1 - x^3)} \right\}^{1/2} \qquad (4)$$

Note that M_c/M_s equals to the mass ratio of the insoluble block and soluble blocks, a constant for a given diblock copolymer, independent of the actual density distributions of the core and shell. Therefore, for each measured $\langle R_g \rangle / \langle R_h \rangle$ in Figure 5, we are able to find a corresponding x according to eq 4 and further calculate R_c and ΔR since $R_c = \langle R_h \rangle x$ and $\Delta R = \langle R_h \rangle - R_c = \langle R_h \rangle (1 - x)$.

Figure 6 shows that R_c is nearly independent of n_{chain}, but ΔR increases with n_{chain}. It is worth noting that the values of R_c are sufficiently close to the contour length of the PMPCS block (~31 nm). This clearly reveals that when more copolymer chains

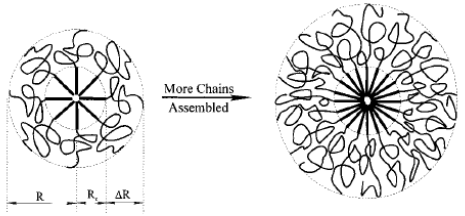


Figure 7. Schematic of a core−shell nanostructure formed by a self-assembly of coil−rod diblock copolymer chains in a selective solvent.

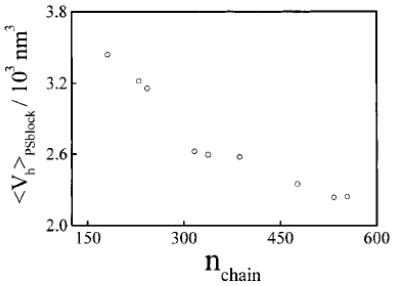


Figure 8. Association chain number (n_{chain}) dependence of average hydrodynamic volume per PS block in the shell ($\langle V_h \rangle_{PSblock}$) of the self-assembled PS-*b*-PMPCS nanostructure.

are self-assembled into the core−shell nanostructure, the insoluble rodlike PMPCS blocks are simply inserted into the core while the soluble coillike PS blocks are forced to stretch in the shell due to the repulsion in a good solvent. Further calculation shows that as n_{chain} increases from 180 to 554, the surface area occupied per PS block decreases from 47 to 18 nm^2 and the core density increases from 0.19 to 0.47 g/cm^3, further indicating the packing of the PMPCS blocks in the core and the elongation of the PS blocks in the shell, as shown in Figure 7.

The stretching of a coillike chain in the shell has previously been reported.[29] However, to our knowledge, a core with a constant size is observed for the first time. In the past, it was always assumed that the core had a chain density close to that of bulk polymer (~1 g/cm^3). However, our results clearly indicate that the core actually contains more than 50% of the solvent even in its highly packed state. Figure 8 shows that the average hydrodynamic volume per PS block in the shell decreases as n_{chain} increases. In other words, the average density of the shell increases as more diblock copolymer chains are inserted into the nanostructure. It reveals that the PS blocks are not only stretched, but also squeezed. The swollen PS blocks behave very similar to the polymer chains grafted on a given surface,[34−36] but very different from the adsorption of long polymer chains on a given surface because the average volume per adsorbed chain increased with the adsorption.[29]

Conclusions

The novel coil−rod diblock copolymer PS-*b*-PMPCS in a selective solvent, *p*-xylene, can self-assemble into a core−shell

(34) de Gennes, P. G. *Macromolecules* **1980**, *13*, 1069−1075.
(35) Marques, C.; Joanny, J. F.; Leibler, L. *Macromolecules* **1988**, *21*, 1051−1059.
(36) Jones, R. L.; Spontak, R. J. *J. Chem. Phys.* **1995**, *103*, 5137−5143.

总结部分

- 重点概括论文核心思想，但与摘要不同的是，要进行必要的升华。
- 比如论文讨论某个合成聚合物纳米颗粒的新途径，在总结部分可以深入讨论这个新途径对于该领域科学研究或此类材料在实际应用等的巨大影响，摘要也可以提这个信息，但一般不会很具体。
- 另外，总结部分也可以讨论这个解决方法还有哪些地方值得改进，如何改进。

致谢与参考文献

- 一般致谢部分首先是感谢相关基金对本项目的支持，然后是合作者或同事在某个细节方面的帮助，因为这些帮助不足以使他们成为论文的作者，所以放在致谢部分。
- 参考文献需要注意以下三个方面：（1）每个杂志都有自己的格式，所以必须按要求的格式组织；（2）文献的作者、期刊缩写、年代、卷数以及页码等信息必须仔细核对正确；（3）所有列出的参考文献必须自己阅读过，不能简单的把某篇文献的相关参考文献引入到自己的论文。

摘要

- 摘要的重要性仅次于标题，由于现在网上可以看到不少刊物所刊登论文的摘要，写好论文摘要就更加重要。
- 只有摘要能引起读者兴趣，读者才会去查找全文。

标题

- 长度一般不超过20个词，一口气能读完。
- 正和我们自己一样，无论是从刊物的目录或是从网上，首先看到的是标题，因此首先要选择一个醒目而引人注意的标题。
- 早年经常使用的如 “某某问题的研究”一类的标题，现已很少有人使用。更为常见的是用论文中的主要结论作为标题，以期引起读者注意。

关于语言

- 我们的母语不是英语，而好的期刊基本都是英文的，我们强调用逻辑的严谨去征服编辑和审稿人，应该做到没有语法错误，当然语言优美是更好的。关于语言的训练，这里推荐一个方法，每天看英文的新闻报道或者是文章，至少半个小时。很多国内的一流科学家，通过这个过程把英语训练出来了，非常有用。
- 抄袭定义：连续6个词相同就视为抄袭，请特别小心。

科技英语与普通英语不同，很少需要表达感情的用词和用语，原则是“Objective” instead of “Subjective”，为此，可采用一些典型的句型来表达意思。其中，使用最多的是以“it”为形式主语的句型，以减少有人称的句型或被动语态，使多种句型交替使用，克服文章中句型单一的弊端。

用法：

It is + adj.+ to……

It is advantageous to work at lower temperature.

是否需要专业公司修改？

Gold service

- Editing by two editors
- Approval by managing editor
- Assessed by senior editor
- Suggestions regarding languages
- A summary of the editing result

Word count	4 days	7 days	14 days
Short (<1,500 words)	$416	$344	$314
Regular (1,500–6,000 words)	$553	$449	$424
Long (6,001–12,000 words)	$654	$564	$519
Custom* (>12,000)	N/A	$72	$57

Silver service

- Editing by one editor
- Approval by managing editor
- Assessed by senior editor

Word count	2 days	3 days	5 days	12 days
Short (<1,500 words)	$344	$264	$233	$199
Regular (1,500–6,000 words)	$514	$398	$329	$289
Long (6,001–12,000 words)	N/A	$499	$436	$369
Custom* (>12,000)	N/A	N/A	$49	$40

https://languageediting.nature.com/en/

如何修改自己的论文

- 初稿完成后，先放一段时间，等自己对这个工作有点陌生后再开始修改。
- 努力从一个挑剔审稿人的角度来审视论文，首先看逻辑是否清晰；其次行文结构上是否连贯，承接起应是否自然；最后是检查各个细节，图表是否有计算错误、参考文献是否全面准确等。
- 请合作者进一步修改。
- 论文尽量多修改，不要害怕因此耽搁，从最后发表的角度看，你准备得越充分，实际花费的时间越少。

支持材料（supporting information）

- 如果有尽量提供，特别是communication或者letter。因为篇幅限制，有些图表或者详细的合成最好挪到supporting information里面。
- 支持材料的组织顺序也尽量跟主体论文保持一致，也就是先合成，后结构，最后功能与应用。

英文写作常见的错误

1. a, an, the

Examples of incorrect usages

Incorrect	Figure 2 shows the distribution of relative velocity on surface of main and splitter blades.[15]
Correct	Figure 2 shows the distribution of relative velocity on **the** surface of **the** main and splitter blades.[15]
Incorrect	The software PowerSHAPE is chosen to be **a** 3D modeling tool; it is good at dealing with free surfaces and curves.[4]
Correct	The software PowerSHAPE is chosen to be **the** 3D modeling tool; it is good at dealing with free surfaces and curves.[4]

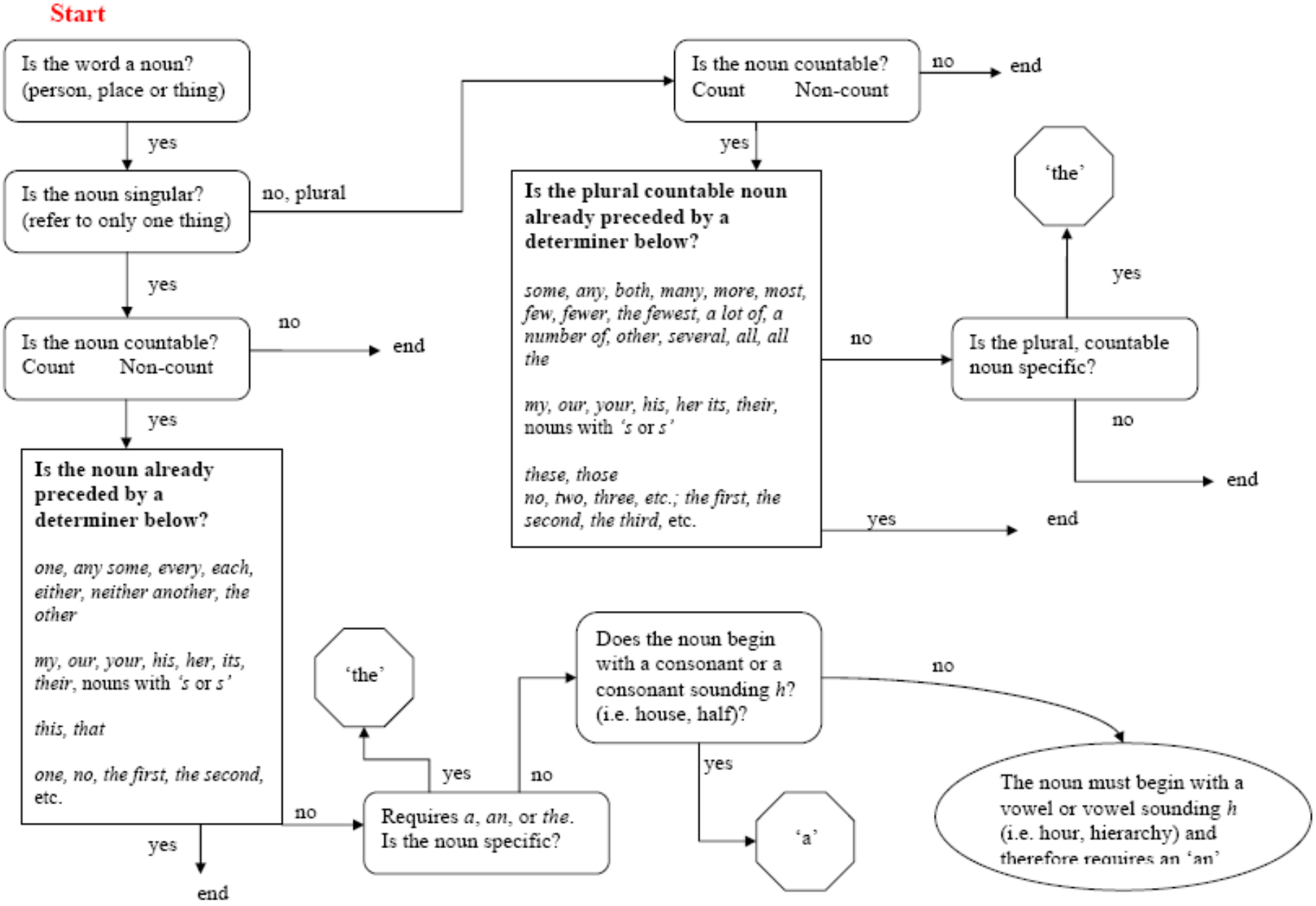
Incorrect A theoretical method for calculating the inner flow-field in centrifugal impeller with splitter blades and investigation of the interactions between main and splitter blades is presented in this paper. The vortices are distributed on the main and splitter blades to simulate the effects of flows. Systematical study of number and distribution of vortices is conducted.[15]

Correct A theoretical method for calculating the inner flow-field in **a** centrifugal impeller with splitter blades and **an** investigation of the interactions between main and splitter blades is presented in this paper. The vortices are distributed on the main and splitter blades to simulate the effects of flows. **A** systematical study of **the** number and distribution of vortices is conducted.[15]

Incorrect Theoretically, remanufacturing could fully take advantage of resources contained in EOF product thereby minimizing impact on environment to the greatest extent compared to landfill or recycling of materials; consequently it contributes greatly to resource conservation.[16]

Correct Theoretically, remanufacturing could fully take advantage of resources contained in **an** EOF product thereby minimizing **the** impact on **the** environment to the greatest extent compared to landfill or recycling of materials; consequently it contributes greatly to resource conservation.[16]

When to use **a**, **an**, and **the**



2. Very Long Sentences

Too long

According to the characteristic of fan-coil air-conditioning systems, this paper derives the cooling formula of fan-coil units based on ~~the~~ heat transfer theories and puts forward a new method to gauge cooling named *Cooling Metering on the Air-side,* which can monitor the individual air-conditioning cooling consumption during a period of time by detecting the parameters of inlet air condition – temperature and humidity – of the fan-coil air-conditioning system as well as the parameters of inlet cooling water provided by the chiller.

Correct

This paper derives the cooling formula of fan-coil units based on the characteristics of fan-coil air-conditioning systems and heat transfer theories, and puts forward a new method to gauge cooling called *Cooling Metering on the Air-side*. The new method can monitor individual air-conditioning cooling consumption during a period of time by detecting the condition of inlet air – temperature and humidity – of the fan-coil air-conditioning system as well as the parameters of the inlet cooling water provided by the chiller.

Too long

The gear transmission is grade seven, the gear gap is 0.00012 radians, the gear gap has different output values corresponding to any given input value, non-linearity of the gear gap model can be described by using the phase function method, the existing backlash block in the non-linear library of the Matlab/zdimulink toolbox can be used, the initial value of gear gap in the backlash block is set to zero.[9]

Correct

The gear transmission is grade seven. The gear gap, which is 0.00012 radians, has different output values corresponding to any given input value. The non-linearity of the gear gap model can be described by using the phase function method. The existing backlash block in the non-linear library of the Matlab/zdimulink toolbox can be used; the initial value of gear gap in the backlash block is set to zero.

Too long

…where m is the mass of the heavy disk mounted at the mid-span of a massless elastic shaft, e is the eccentricity of the mass center from the geometric center of the disk, ϕ is the angle between the orientation of the eccentricity and the ξ axis, k_ξ and k_η are the stiffness coefficients in two principal directions of shaft respectively, c is the viscous damping coefficient of the shaft and the disk, c_i is the inner damping coefficient of shaft, ω is the rotating speed, ξ_s and η_s are the components of initial bend in directions of ξ, η axes respectively: $\xi_s = r_b \cos\theta$, $\eta_s = r_b \sin\theta$.[1]

Correct

Where

m is the mass of the heavy disk mounted at the mid-span of a massless elasticshaft,

e is the eccentricity of the mass center from the geometric center of the disk,

ϕ is the angle between the orientation of the eccentricity and the ξ axis,

k_ξ and k_η are the stiffness coefficients in the two principal directions of the shaft,

c is the viscous damping coefficient of the shaft and the disk,

c_i is the inner damping coefficient of the shaft,

ω is the rotating speed,

ξ_s and η_s are the components of initial bend in directions of ξ, η axes, respectively: $\xi_s = r_b \cos\theta$, $\eta_s = r_b \sin\theta$.

Too long

The clear height of the case is 6.15 meters; the thickness of the roof is 0.85 meters; the thickness of the bottom is 0.90 meters, the overall width is 26.6 meters, the overall length of the axial cord is 304.5 meters, the length of the jacking section is about 148.8 meters; the weight of the case is about 24127 tons.[3]

Clear

- Case clearance height 6.15 meters
- Roof thickness 0.85 meters
- Bottom thickness 0.90 meters
- Overall width 26.6 meters
- Overall length of the axial cord 304.5 meters
- Length of the jacking section 148.8 meters (approx.)
- Weight of the case 24127 tons (approx.)

3. Prefacing the main idea of a sentence by stating the purpose, location or reason first

Incorrect For the application in automobile interiors, this paper studies the nesting optimization problem in leather manufacturing. [5]

Correct This paper studies the nesting optimization problem in leather manufacturing for application in automobile interiors.

Incorrect Especially when numerical control (NC) techniques[4] are widely used in industry and rapid prototype methods[5][6] bring a huge economical benefits, the advantage of constructing 3D model[7][8][9] becomes extremely obvious.[2]

Correct The advantage of constructing a 3D model[7][8][9] becomes extremely obvious especially when numerical control (NC) techniques[4] are widely used in industry and rapid prototype methods[5][6] bring a huge economical benefits.

Incorrect Inside the test box, the space was filled with asbestos.[15]

Correct The space inside the test box was filled with asbestos.

Incorrect	In practice, we employed this approach to dispose of a wheelhouse subassembly of one kind of auto-body, and the results show that this method is feasible.[16]
Correct	We employed this approach to dispose of a wheelhouse subassembly of one kind of auto-body, and the results show that this method is feasible.
Incorrect	To ensure sheet metal quality as well as assembly quality, CMMs are widely used in automotive industry production.[16]
Correct	CMMs are widely used in automotive industry production to ensure sheet metal quality as well as assembly quality.

4. Tendency of placing phrases which indicate time at the beginning of a sentence

Incorrect	When U is taken as the control parameter, the BDs for Δ=0.0, 0.001, 0.005 are shown in Fig. 8.
Correct	Figure 8 shows the BDs for Δ=0.0, 0.001, and 0.005 when U is taken as the control parameter.

5. Place the most important subject at the beginning of the sentence for emphasis

Incorrect Based on the *triangulation structure* built from unorganized points or a CAD model, the extended STL format is described in this section.[4]

Correct The extended STL format is described in this section based on the *triangulation structure* built from unorganized points or a CAD model.

Incorrect The 3D dentition defect and restoration element models are designed precisely with complicated surfaces.[4]

Correct The 3D dentition defect and restoration element models with complicated surfaces are designed precisely.

6. ‘Respectively’ and ‘respective’

1. Respectively is misplaced in the sentence; it is put before the nouns to which it refers.

Incorrect Equations 2～6 can be **respectively** linearized as:……(equations given)…[13]
Correct Equations 2～6 can be linearized as:……(equations given)…, **respectively**.

Incorrect The weights of the two experts are **respectively** 0.600 and 0.400.[19]
Correct The weights of the two experts are 0.600 and 0.400, **respectively**.

7. Numbers and Equations

The use of Arabic numerals, itself, is not an error however; they should never be used at the beginning of sentences.

Incorrect **12** parameters were selected for the experiment.
Correct **Twelve** parameters were selected for the experiment.

Arabic numerals should be used to give data in technical papers, however they should not be used to give general information.

Incorrect All **3** studies concluded that the mean temperature should be **30°C**.
Correct All **three** studies concluded that the mean temperature should be **30°C**.

8. ‘such as’ and ‘etc.’

Such as and etc. are commonly misused by Chinese-English writers. Such as means ‘for example’ and implies that an **incomplete list will follow; etc. means ‘and so** on’ and is used at the end of a list to show it is **not complete. Therefore, using such as** and etc. together is redundant.

Incorrect Studies of methodology and process of implementing remanufacturing mainly focus on durable products **such as** automobile motors, printers, **and etc**.[11]

Correct Studies of methodology and process of implementing remanufacturing mainly focus on durable products **such as** automobile motors, **and** printers.

Incorrect Compared to traditional industry, Micro-electronic fabrication has three characteristics **such as** high complexity, high precision and high automation.

Correct Compared to traditional industry, Micro-electronic fabrication has three characteristics: high complexity, high precision and high automation.

9. Others

1) Some words have identical singular and plural forms and do not need an *s* added on to make them plural. These words include:

- *literature* (when referring to research)
- *equipment,*
- *staff* (referring to a group of people)
- *faculty*

2) Avoid redundancy in the following types of phrases frequently used by Chinese English writers

Instead of	Say	Or say
Research work	Research	Work
Limit condition	Limit	condition
Knowledge memory	Knowledge	Memory
Sketch map	Sketch	map
Layout scheme	Layout	scheme
Arrangement plan	Arrangement	plan
Output performance	Output	performance
Simulation results	results	simulation
Knowledge information	Knowledge	information
Calculation results	results	calculation
Application results	Results	Application

投稿之前应该做的几件事

- 再次核对论文格式是否与要投的杂志要求一致。
- 把论文打印出来看看图表等是否清晰，分辨率是否足够，另外可以大声朗读，这样很容易找到行文不流畅的句子或者错别字，然后马上改正；
- 可以邀请同事（不一定要非常懂你的工作）帮你看看，他们或许能给你提供一些非常好的建议。
- 把最后的稿件送给所有的论文作者，得到他们的同意后把论文投出去。

投稿相关事项

- 选择合适的期刊还不是影响因子最高的期刊，虽然现在二者越来越一致。
- 盯住某几个期刊投稿，在一定积累后更容易接收。
- 据说在中国，投稿的最佳时间在春节前后。

关于综述的一些建议

- 文献综述是文献综合评述的简称，指在全面搜集，阅读大量的有关研究文献的基础上，经过归纳整理，分析鉴别，对所研究的问题（学科，专题）在一定时期内已经取得的研究成果，存在问题以及新的发展趋势等进行系统，全面的叙述和评论。
- “综”即收集“百家”之言，综合分析整理；“述”即结合作者的观点和实践经验对文献的观点，结论进行叙述和评论。其目的并不是将可能找到的文章列出，而是要在辨别相关资料的基础上，根据自己的论文来综合与评估这些资料。

- 文献综述是对某一方面的专题搜集大量情报资料后经综合分析而写成的一种学术论文，它是科学文献的一种。文献综述是反映当前某一领域中某分支学科或重要专题的最新进展、学术见解和建议的它往往能反映出有关问题的新动态、新趋势、新水平、新原理和新技术等等。
- 基本目的：让读者熟悉现有研究主题领域中有关研究的进展与困境；提供后续研究者的思考：未来研究是否可以找出更有意义与更显著的结果；对各种理论的立场说明，可以提出不同的概念架构；作为新假设提出与研究理念的基础，对某现象和行为进行可能的解释；改进与批判现有研究的不足，发掘新的研究方法与途径，验证其他相关研究。

- 文献综述不应是对已有文献的重复、罗列和一般性介绍，而应是对以往研究的优点、不足和贡献的批判性分析与评论。因此，文献综述应包括综合提炼和分析评论双重含义。
- 文献综述要文字简洁，尽量避免大量引用原文，要用自己的语言把作者的观点说清楚，从原始文献中得出一般性结论。

文献综述的目的是通过深入分析过去和现在的研究成果，指出目前的研究状态、应该进一步解决的问题和未来的发展方向，并依据有关科学理论、结合具体的研究条件和实际需要，对各种研究成果进行评论，提出自己的观点、意见和建议。应当指出的是，文献综述不是对以往研究成果的简单介绍与罗列，而是经过作者精心阅读后，系统总结某一研究领域在某一阶段的进展情况，并结合本国本地区的具体情况和实际需要提出自己见解的一种科研工作。

- 文献综述不是资料库，要紧紧围绕课题研究的“问题”，确保所述的已有研究成果与本课题研究直接相关，其内容是围绕课题紧密组织在一起，既能系统全面地反映研究对象的历史、现状和趋势，又能反映研究内容的各个方面。
- 文献综述的综述要全面、准确、客观，用于评论的观点、论据最好来自一次文献，尽量避免使用别人对原始文献的解释或综述。

格式与写法

- 文献综述的格式与一般研究性论文的格式有所不同。这是因为研究性的论文注重研究的方法和结果，特别是阳性结果，而文献综述要求向读者介绍与主题有关的详细资料、动态、进展、展望以及对以上方面的评述。
- 因此文献综述的格式相对多样，但总的来说，一般都包含以下四部分：即前言、主题、总结和参考文献。撰写文献综述时可按这四部分拟写提纲，在根据提纲进行撰写工。

- 前言部分，主要是说明写作的目的，介绍有关的概念及定义以及综述的范围，扼要说明有关主题的现状或争论焦点，使读者对全文要叙述的问题有一个初步的轮廓。
- 主题部分，是综述的主体，其写法多样，没有固定的格式。可按年代顺序综述，也可按不同的问题进行综述，还可按不同的观点进行比较综述，不管用那一种格式综述，都要将所搜集到的文献资料归纳、整理及分析比较，阐明有关主题的历史背景、现状和发展方向，以及对这些问题的评述，主题部分应特别注意代表性强、具有科学性和创造性的文献引用和评述。

- 总结部分，与研究性论文的小结有些类似，将全文主题进行扼要总结，对所综述的主题有研究的作者，最好能提出自己的见解。
- 参考文献虽然放在文末，但却是文献综述的重要组成部分。因为它不仅表示对被引用文献作者的尊重及引用文献的依据，而且为读者深入探讨有关问题提供了文献查找线索。因此，应认真对待。参考文献的编排应条目清楚，查找方便，内容准确无误。

注意事项

由于文献综述的特点，致使它的写作既不同于“读书笔记”“读书报告”，也不同于一般的科研论文。因此，在撰写文献综述时应注意以下几个问题：

- 搜集文献应尽量全。掌握全面、大量的文献资料是写好综述的前提，否则，随便搜集一点资料就动手撰写是不可能写出好多综述的，甚至写出的文章根本不成为综述。
- 注意引用文献的代表性、可靠性和科学性。在搜集到的文献中可能出现观点雷同，有的文献在可靠性及科学性方面存在着差异，因此在引用文献时应注意选用代表性、可靠性和科学性较好的文献。

- 引用文献要忠实文献内容。由于文献综述有作者自己的评论分析，因此在撰写时应分清作者的观点和文献的内容，不能篡改文献的内容。
- 参考文献不能省略。有的科研论文可以将参考文献省略，但文献综述绝对不能省略，而且应是文中引用过的，能反映主题全貌的并且是作者直接阅读过的文献资料。

文献综述中常见的问题

- **大量罗列堆砌文章。**误认为文献综述的目的是显示对其他相关研究的了解程度，结果导致很多文献综述不是以所研究的问题为中心来展开，而变成了读书心得清单。
- **轻易放弃研究批判的权利。**遇到名校名师，更易放弃自己批判的权利。由于大量引用他人的著作，每段话均以谁说起始，结果使自己的论文成为他人研究有效与否的验证报告，无法说服读者相信自己的论文有重要贡献。
- **选择性地探讨文献。**文献综述就变成了自己主观愿望的反映，成了一种机会性的回顾。一定要进行系统的，全面的文献综述，以严谨的科学设计来寻找，评估以及整合科学研究的证据，确保文献综述完整不偏。

汇报提纲

- 我们的科研环境
- 一流研究与一流研究生
- 论文写作
- **审稿意见与修改**

论文要求修改

Dear Editor Dr. Editor,

Thank you very much for the time and effort to have our manuscript reviewed, and for giving us the opportunity to revise it. The reviewers' comments/suggestions are very helpful to further improve this manuscript. We have fully revised it according to them. For your convenience, the main revisions are marked with yellow. Below are point-to-point responses to the reviewers.

This submission deals with the ……

Response: Thank you very much for the very important comments and suggestions. The manuscript has been further carefully revised accordingly. For your convenience, the main revisions are marked with yellow in the revised manuscript.

论文被拒后反驳

Dear Editor Dr. Editor,

This manuscript was previously submitted to *Nature Nanotechnology*. Thank you very much for the time and effort to have our manuscript reviewed. Of course, we understand and respect your decision in any case. As editor board members and editors in several journals, I fully understand the heavy work load for the editor. Therefore, I generally do not argue for a manuscript. However, we felt very upset when reading the comments from the reviewers in this manuscript. We greatly appreciate the review work from all reviewers, but some obvious misunderstandings had been made by……

“Learn from yesterday live for today hope for tomorrow. **The important thing is not to stop questioning.**”

–––Albert Einstein

思想比知识更重要！

中国不会成为世界强国，因为近代中国没有独立的、足以影响世界的思想。

–––撒切尔夫人

科学精神，人文情怀

---求是基金会

《双螺旋》、《完美的对称》、《麻省理工学院与创业科学的兴起》、《真实地带-十大科学争论》、《一流大学卓越校长》、《数学恩仇录》、《莎士比亚、牛顿和贝多芬：不同的创造模式》、《大学者》、《杨振宁文集》、《孤独的科学之路-钱列拉塞卡传》、《科学与政治的一生-莱纳斯鲍林传》、《居里夫人传》、《苏东坡传》

The farther backward you can look the farther forward you are likely to see！

---Winston Churchill

The farther forward you can make an achievement!

Hope is a good thing,
maybe the best of good things,
and no good thing ever dies.

希望是美好的，
可能是最美好的，
而美好的东西永远不会消失

The Shawshank Redemption (1994)