写科研论文的最高境界

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当代音乐大师David Foster给我很多启发。他创作的流行音乐脍炙人口，很多天王级歌星家喻户晓的歌曲都是他写的。当代有那么多创作歌曲的人，为什么David Foster的音乐那么出色呢?为什么David Foster的音乐一听就知道是大师手笔?我感到，David Foster是把自己的灵魂铸造到他的音乐中去了。

写科研论文的最高境界是行云流水、人剑合一。

有些老板老是说：“ 数据收集得差不多了吧?下星期能把文章给我了吧? ”其潜台词是：“ 差不多了。下星期把文章交出来。 ”其实那是尽拿软柿子捏。别人号称“ 在写、在写，下星期给你 ”，让老板吃“ 定心丸 ”，结果今天拖明天、这周拖下周、这月拖下月，好长时间交不出文章，这时候怎么也不见他去钳制别人?

从事科学研究不是从事机械化生产，不是生产零件、扳手、电冰箱，并不是说你收集齐全数据，第二天就能出文章的。在实验数据已经收集齐全的前提下，写科研论文是需要点灵感的。心情烦躁的时候坐在那里，什么也写不出;而灵感来的时候，一个晚上能写很多。这也是为什么我有时候很多时间不写博客，而有的时候一气写好几篇的原因。在做好实验工作的前提下，如果能把David Foster创作音乐那种精神用到写文章上，就能写出好文章。

我写博客文章如我写科研论文。我一向是发表原创的博文，并且力争做到每篇博文有一定的内容和长度，不发“ 无厘头 ”博文。写博文的时候，我随着思想的流动而写，没有刻意地修改、做作。但是我也并不是想到哪里就写到哪里、信口开河。我的博文，每一段都有特定的功能，都有一层意思在里面，条理非常清楚。

反过来，我写科研论文如同写博文。写科研论文的时候，我希望能达到行云流水、人剑合一的境界。意思就是说把我的思想、灵魂和灵气融入到科研论文中去，让读者通过字里行间看到作者是怎样的人。通过我的科研论文，我希望读者能看到：

1)对课题有宽厚的整体把握(vision)

2)对上下文(context)搞得很清楚

3)对数据有严密客观的分析

4)在做实验和写作的时候心里有张“ 地图 ”，时刻知道实验的目的是什么?现在已经得到了什么

结果，说明了什么问题?接下去我要表达什么内容，说明什么问题?还有什么东西没有搞清楚?

5)作者的逻辑思路和实验设计，即作者是怎么思考的，是怎么做实验的，是怎么选择的。

通过我的科研论文，我还希望读者能看到：

5)科研激情(passion)

6)理性思辨(critical thinking)

7)有滋有味的“探宝”故事，而不是为了测数据而测数据

8)个性(personality)

特别是，我希望能“文如其人”，即作者是什么样的人，能够跃然于纸上。

在K.R. Seddon为Inorganic Liquids in Synthesis (Second Edition)一书写的序言中，他写道："How many papers within this annual flood of reviews say anything critical, useful, or interesting? How many add value to a list of abstracts which can be generated in five minutes using SciFinder ot the ISI Web of Knowledge? How many of them can themselves be categorised as garbage? It is the twenty-first century----if a review is just an uncritical list of papers and data, what is its value?"当然他还写了很多类似的“坏话”，读起来令我非常舒畅。读到这序言，我的脑海中想象出一个大胡子老头在咆哮、斥责别人发表垃圾文章。

现在很多搞纳米和纳米催化的人都狂吹自己的催化剂如何如何有用。但是事实上很多纳米催化剂只是吸引眼球，它们的制备非常繁琐，无法工业化。更何况很多文章报道的纳米新结构催化剂的效果比普通商品化催化剂都差，那么登山何必扛着船呢?在我写的一篇关于黄金催化剂综述Gold Nanoparticles as Chemical Catalysts, in: Nanomaterials: Inorganic and Bioinorganic Perspectives, C.M. Lukehart, R.A. Scott (eds.), John Wiley & Sons, Chichester,
2009中，我在很长的结尾部分写了如下文字：

One valid question is whether the gold catalysts synthesized by advanced, demanding, and often tedious, synthetic methods or using unique nanostructured supports (e.g., nanotubes and nanobelts) are better than those synthesized via conventional methods or using commercialized supports. As commented in a recent book,12 “Many methods of preparation have been used, but one wonders why some people have laboured to develop very sophisticated methods while others have been content with a much simpler method, apparently giving the same result, namely, the desired small gold particles.” The answer to that question is certainly ambiguous. On the one hand, modern nanotechnology can indeed help with the design of many gold catalysts with improved catalytic performance that can not be achieved by using conventional methods. On the other hand, one can find many publications focusing on the synthesis part, with the catalytic performance not reported or very low.12 One pitfall may be that some gold catalysts may contain residual capping agents and/or organic fragments. These organic fragments, if not sufficiently removed by special treatments, may poison CO oxidation, although gold catalysts with organic fragments may still show some activity in certain organic reactions. This point was sometimes overlooked, and thus undermining the real performance of these advanced gold catalysts. How to properly remove the organic fragments while avoiding the sintering of gold nanoparticles is a challenge. Even if this challenge is overcome, many factors still have to

be considered before there can be large-scale utilization of gold catalysts synthesized by advanced technology.

在这里，我怒斥到现在很多人报道纳米催化剂，说效果怎么怎么好。可是一读文章，发现催化剂效果很差，或者根本就没有报道!没有报道可能是由于两种原因引起的：一是的确没有做;二是做了，发现效果不好而没有报道。这不是误导读者吗?登山何必扛着船?用复杂方法的绕弯子合成了一堆废物，效果比普通催化剂差，这样的文章有价值吗?应该怎样科学看待这个问题?在我写下这些文字后，编辑写来信。编辑说他仔细读了这篇文章，写得非常好，他尤其特别欣赏我这一段话，反映了critical thinking。本来老板说我太critical，但是既然编辑都夸奖我，他也不说什么了。

以下一段文字，取自我最近一篇第二作者文章引言部分的最后一段。情况是在我写下以下文字之前，他们已经发表了一篇简短的快报。一般人的写法是隐瞒不报或者一笔带过，但是我选择了毫不畏惧、大篇幅“ 迎面直击 ”!一上来就挑明已经发表了快报，但是什么什么不清楚，没有详细报道或者详细讨论，因此本文就是要弥补这些空缺。然后我笔锋一转，用画龙点睛之笔说清楚本文的两个意义和贡献。这种毫不畏惧、迎面直击的态度博得了审稿人的好感。审稿人都说虽然作者已经发表了一篇快报，但是本文的确有新内容和重要性，小修改后发表。

The main part of our previous short communication26 focused on the in-depth characterization of ... alloy NPs and an ..... catalyst prepared under optimal conditions, whereas the influences of synthesis parameters on the resulting products, the synthesis mechanism, the critical roles of pretreatment conditions and catalyst compositions in determining catalytic performance, as well as the contribution of the work to the fields of bimetallic materials synthesis and gold catalysis were not reported or elaborated in detail. Therefore, we expand on these aspects more explicitly in the current paper. There are two significant aspects of the work described in this paper. First, the synthesis of size-controlled and homogeneous ... alloy NPs has been found to be extremely evasive to date.15 Hence, the low-temperature solution-phase synthesis of ... alloy NPs with well controlled shape and sizes should be an important progress that may inspire subsequent bimetallic materials synthesis. Second, catalysis by gold nanoparticles has been intensively studied recently,28-33 but the use of alloy NPs as precursors to design advanced catalysts with multiple components (i.e., active metal, metal oxide modifier/promoter, solid support) and tailored interfacial structures has been rarely reported. Hence, this work may be of interest to both materials scientists and those working in the area of catalyst design.

读了以上这段文字，可以看出作者信心十足、掷地有声，一点也不退却、畏缩。不但事先坦诚地说清楚，解决了审稿人的疑虑，还对文章的意义有总体把握，能够把重要性用“ 画龙点睛 ”之笔说出来，为审稿人写正面的审稿意见提供参考。