A Comparative View of Nanotechnology Patents in Japan and the U.S.: A Case Study of Two Patents

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ABSTRACT

Objections to patentability raised in the examiner correspondence of two nanotechnology patent applications filed in the United States and in Japan are examined to reveal national grant-making trends within both countries' patent offices. Statistically, there are disparities between the grant approval rates on similar patents filed at United States and Japanese patent offices. The authors suggest utilizing the patent prosecution highway, recently permanently adopted between the United States and Japan, as a method to potentially beat unfavorable statistics by leveraging the approval of certain claims in one country with identical claims in the other. Predictions on the probable effects of recent cases from the Japanese Intellectual Property High Court and the United States Supreme Court on future patentability of nanotechnology are interspersed through the analysis.

I. INTRODUCTION

Prosecution strategies that are useful for patenting nanotechnology inventions are rapidly changing due to evolving patentability standards and levels of rigor applied to the examination of nanotechnology patents around the world. This article will examine the changing landscape in Japan and the United States for nanotechnology patent applicants, utilizing two patents that issued in both Japan and the United States as case studies of the patent application process. After reviewing the scope of

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the nanotechnology case study patents,[1] the article concludes with observations to help practitioners maximize nanotechnology patent scope in Japan and the United States.

In the last ten years or so, the Japan Patent Office (JPO) has been trying to raise patentability standards, including inventive step, so that the patents it grants can withstand the judicial scrutiny they might go through after leaving the JPO.[2] For example, the current Examination Guidelines published by the JPO do not contain cautionary remarks against the *ex post facto* analysis or hindsight approach because such remarks were stricken out for unknown reasons in the revisions made in 2000.[3] This is despite the fact that the avoidance of hindsight approach was exactly the legislative intent for having the inventive step as a patentability requirement in the initial 1959 version of the current Japanese Patent Law.[4] As a result, currently when the inventive step is pointed out to be missing during prosecution, the lack of motivation or suggestion for combining two or more references is rarely a sufficient argument before the JPO.

Meanwhile, in the United States, the Supreme Court issued the landmark decision *KSR International Co. v. Teleflex Inc.*[5] in 2007, leading the U.S. Patent Office (USPTO) to introduce a new set of guidelines[6] that facilitate obviousness rejections of patent claims. In addition, the USPTO has implemented heightened quality controls (announced at recent Nanotechnology Customer Partnership meetings) that have made it more difficult on applicants to obtain allowance.

II. CASE STUDY ONE: A NANO COMPOSITE ELECTROLYTE FILM FOR FUEL CELL

1. U.S. Claim Scope

U.S. patent No. 7,357,999 entitled, "A nanocomposite electrolyte film for fuel cell" was issued with an independent claim matching the scope of an independent claim in its Japanese counterpart.[7] The U.S. patent application was filed on July 11, 2003, allowed on October 4, 2007, and issued on April 15, 2008, taking more than four years from filing to grant.

All three types of rejections commonly observed, 35 USC § 112 second paragraph (indefiniteness), § 102 (anticipation), and § 103 (obviousness), were raised by the Examiner in the four Office Actions during prosecution.[8] Note that the third and fourth Office Actions were mailed during and after the time

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[1] The two patents selected for this article were chosen solely for illustration purposes. This article does not express any legal opinion with respect to the underlying patents, but rather utilizes their prosecution histories in Japan and the United States to illustrate differences in the patentability process in those two countries.

[2] For example, in the Intellectual Property Strategic Program 2006, drafted under the leadership of Prime Minister Koizumi, the importance of the stability of intellectual property rights was emphasized. STRATEGIC COUNCIL ON INTELLECTUAL PROPERTY, CABINET OFFICE OF JAPAN, INTELLECTUAL PROPERTY STRATEGIC PROGRAM 2006 70-71 (2006), *translation* http://www.kantei.go.jp/jp/singi/titeki2/keikaku2006_e.pdf.

[3] EXAMINATION STANDARDS OFFICE, JAPAN PATENT OFFICE, EXAMINATION GUIDELINES FOR PATENT AND UTILITY MODEL IN JAPAN (2000), *translation http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/1312-002_e.htm.*

[4] Patent Act, Law No. 121 of 1959 (Japan).

[5] KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007).

[6] Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 Fed. Reg. 57526 (Oct. 10, 2007).

[7] U.S. Patent No. 7,357,999 (Apr. 15, 2008). The text of claim one reads as follows:

A nanocomposite electrolyte membrane for a fuel cell, comprising: a polymer having cation exchange groups; and silicate nanoparticles dispersed in the polymer, the silicate nanoparticles having a layered structure, and the silicate nanoparticles being intercalated with the polymer, or layers of the silicate nanoparticles being exfoliated.

[8] Letter from Karie O'Neill, Examiner, USPTO, to Buchanan Ingersoll PC, attorneys representing Hae-Kyoung Kim (Jan. 17, 2006) (anticipation, obviousness) [hereinafter First Office Action Kim]; Letter from Karie O'Neill, Examiner, USPTO, to Buchanan Ingersoll PC, attorneys representing Hae-Kyoung Kim (June 20, 2006) (anticipation, obviousness, indefiniteness) [hereinafter Second Office Action Kim]; Letter from Karie O'Neill,

when *KSR* was litigated before the Supreme Court, respectively. The first and second Office Actions, on the other hand, were issued prior to the *KSR* litigation.

With respect to the obviousness rejections, the Patent Office alleged that (i) at the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine several cited references because those references are from the same field of endeavor (fuel cell electrolyte membranes), and (ii) by combining the elements taught by those cited references, one of ordinary skill in the art would have had a reasonable expectation of success for producing the claimed invention.[9] The Applicants successfully overcame the rejections by pointing out that the rejections were erroneously based on disclosures having a priority date of August 10, 2003, one month after the filing date of the claimed invention.[10] The cited references also included a continuation-in-part application, claiming a priority date of an earlier application filed on August 13, 2002, where the relevant subject matter was not disclosed in the parent application.

While the Office was persuaded by the above arguments, it issued a second non-final Office Action based on a new reference.[11] The Applicants overcame the obviousness rejections in the second Office Action by arguing that one of ordinary skill would not have had a reasonable expectation of success because the additional references did not cure certain deficiencies of the primary reference.[12] The Office was again persuaded, but raised further new rejections based on new references in a third non-final Office Action.[13]

In the Response to the third non-final Office Action, instead of making any scope-narrowing claim amendment, the Applicants focused on overcoming the rejections by arguing that (a) one of ordinary skill would not have been motivated to combine the cited references because the new references were directed towards specific purposes different from each other and also different from those of the claimed invention.[14] For example the primary reference, U.S. Patent No. 6,410,142,[15] was directed to a nanocomposite, not a fuel cell membrane, while the additional references were directed to intercalated clay; and (b) one of ordinary skill would not have had a reasonable expectation of success because not all of the elements in the claimed invention would have been disclosed even if all references were combined. The Office was not persuaded, and issued a final rejection.[16] During an interview thereafter the Applicants reiterated the above arguments and provided an exhibit adapted from a book to support their arguments.[17] A Response[18] that included the points discussed during the interview was filed with the

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Examiner, USPTO, to Buchanan Ingersoll & Rooney PC, attorneys representing Hae-Kyoung Kim (Jan. 10, 2007) (anticipation, obviousness) [hereinafter Third Office Action Kim]; Letter from Karie O'Neill, Examiner, USPTO, to Buchanan Ingersoll & Rooney PC, attorneys representing Hae-Kyoung Kim (June 20, 2007) (anticipation, obviousness) [hereinafter Final Rejection Kim].

9 First Office Action Kim.

10 Letter from Laura L. Lee, attorney representing Hae-Kyoung Kim, to Karie O'Neill, Examiner, USPTO (Apr. 14, 2006).

11 Second Office Action Kim.

12 Letter from Laura L. Lee, attorney representing Hae-kyoung Kim, to Karie O'Neill, Examiner, USPTO (Oct. 20, 2006).

13 Third Office Action Kim.

14 Letter from Laura L. Lee, attorney representing Hae-Kyoung Kim, to Karie O'Neill, Examiner, USPTO (Apr. 3, 2007).

15 U.S. Patent No. 6,410,142 (June 25, 2002).

16 Final Rejection Kim.

17 R.J. YOUNG & P.A. LOWELL, INTRODUCTION TO POLYMERS 84-89 (2nd ed., 1991).

18 Letter from Laura L. Lee, attorney representing Hae-Kyoung Kim, to Karie O'Neill, Examiner, USPTO (Sept. 6, 2007).

Office, and a Notice of Allowance[19] was issued. During the prosecution, no scope-narrowing claim amendments were made.

2. Japanese Claim Scope

The Japanese counterpart patent, Japan Patent No. 3,768,991, was filed on December 12, 2003, together with the request for examination, and granted on February 10, 2006, taking two years and three months from filing to grant.[20] The patent publication subsequently occurred on April 19, 2006.[21] The granted claim one is identical to claim one in the counterpart U.S. patent.[22]

During prosecution before the JPO, the Examiner issued only one Office Action (Notification of Reasons for Rejection) dispatched on April 19, 2005.[23] The Japanese Examiner cited three references that were also cited in the U.S. prosecution: WO 2002/000773[24] and U.S. Patent No. 5,919,583[25] for a lack of novelty and inventive step, and Japanese patent application JP2003175340,[26] for a lack of novelty. More specifically, claim one was initially rejected for the lack of novelty based on both WO 2002/000773 and JP 2003-175340. Claims eight and nine were rejected for the lack of inventive step based on the first two references.

In a response that was subsequently filed with the JPO, the applicant pointed out the novelty of claim one without amending it, and successfully persuaded the Examiner.

III. CASE STUDY TWO: A METHOD OF HIGH RESOLUTION PATTERNING

1. U.S. Claim Scope

The U.S. and Japanese counterpart patents that will be considered as the second case study both derived from a Patent Cooperation Treaty (PCT) filing made on September 12, 2002.[27] The application for the U.S. patent entitled "Method for High Resolution Patterning Using Soft X-ray, Process for Preparing Nano Device Using the Same Method," was filed on March 12, 2004, allowed on May 2, 2007, and issued on September 11, 2007, thus taking more than three years in the U.S. system from filing to grant.[28] During prosecution, the application encountered a number of different rejections. Note that the timing of the prosecution of this patent also overlapped the *KSR* litigation in the U.S. Supreme Court.[29]

In the first Office Action, the Examiner raised two types of rejections: 35 U.S.C. § 102(e) (anticipation) and § 103(a) (obviousness).[30] With respect to the anticipation rejections, the Office alleged that the claimed invention was anticipated by a prior art reference. With respect to the obviousness

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19 Letter from Karie O'Neill, Examiner, USPTO, to Buchanan Ingersoll PC, attorneys representing Hae-Kyoung Kim (Oct. 4, 2007).

20 Japanese Patent No. 3,768,991 (Feb. 10, 2006).

21 Japanese Patent Information Organization, Patent Abstracts of Japan, Apr. 19, 2006.

22 U.S. Patent No. 7,357,999 (Apr. 15, 2008).

23 *See* U.S. Patent No. 7,357,999 (Apr. 15, 2008) (under Reference Cited: Other Publications).

24 World Intellectual Property Organization, KOVALENT VERNETZTE POLYMERE UND POLYMERMEMBRANEN VIA SULFINATALKYLIERUNG [Polymers and Polymer Membranes Covalently Cross-linked by Sulphinate Alkylation] (Mar. 1, 2002), http://www.wipo.int/pctdb/en/wo.jsp?wo=2002000773.

25 *See* U.S. Patent No. 5,919,583 (July 6, 1999).

26 *See* U.S. Patent No. 7,357,999 (Apr. 15, 2008) (under Foreign Patent Documents).

27 Weekly Issue No. 12, 2003 PCT Gazette 6069 (PCT/KR02/01714).

28 United States Patent No. 7,267,932 (Sept. 11, 2007).

29 *KSR* was argued before the United States Supreme Court on November 28, 2006 and was decided on April 30, 2007. KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007).

30 Letter from John Mcpherson, Primary Examiner, USPTO, to Rothwell, Figg, Ernst, & Manbeck, P.C., attorneys representing Joon Won Park (July 1, 2005).

rejections, the Office alleged that it would be obvious for one of ordinary skill in the art to combine the teachings of two prior art references to reach the claimed invention. The Applicants attempted to overcome the rejections in a subsequent response.[31] In particular, with respect to the § 103(a) rejections, the Applicants argued that because one cited prior art reference did not cure certain deficiencies in the other, one of ordinary skill in the art would not have been motivated to combine the teachings from both references to reach the invention being claimed. Note that this argument was made in early 2006, while *KSR* was yet to be argued before the Court. The Office was unpersuaded by Applicant's arguments, and issued a Final Office Action.[32] In addition to the nonstatutory obviousness-type double patenting rejections, the Examiner maintained his § 102(e) and § 103(a) rejections. The Examiner argued that a feature the Applicants relied upon in an attempt to overcome the obviousness rejections was not recited in the claims, and limitations from the specification were not read into the claims, citing *In re Van Geuns.*[33]

The applicants then took several actions to expedite partial grant of the patent. A terminal disclaimer was filed to obviate the Obviousness-type double patenting objection. Claims ten through sixteen were cancelled with a simultaneous request for continued examination. The Applicants also amended claim one and were thus able to overcome the § 102(e) rejections for that claim, as well as dependent claims two through nine, all of which were eventually allowed.[34] Regarding the § 103(a) rejections, the Applicants continued to argue that because the prior art references did not cure certain deficiencies in each other, one of ordinary skill in the art would not have been motivated to combine the two teachings to reach the claimed invention. Shortly thereafter the Office issued a Notice of Allowance for the remaining claims over which the § 102(e) rejections were withdrawn.

Interestingly, although neither *KSR* or related cases such as *Graham v. John Deere Co.* [35] were mentioned in the communications between the Applicants and the Office during the prosecution, *KSR*-like language was used, albeit to no avail for the Applicants. The Applicants appeared to have focused on the deficiencies present in the prior art resulting in a lack of motivation to combine as their main argument, and one cannot help but wonder what the outcome might have been if the they had focused their argument on factors such as "teaching away," or others found in post-*KSR* litigations, such as those that led to success in *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd* in 2007.[36]

2. Japanese Claim Scope

The PCT application entered the National Phase in Japan on March 11, 2004, and the substantive examination was requested on May 10, 2004. After the issuance of two Office Actions, the patent was granted on November 2, 2007.[37]

The Japanese Examiner apparently accepted the results of the International Search and International Preliminary Examination (IPER) carried out by the Korean Intellectual Property Office.[38] In the IPER, all the pending claims amended under Article 34 PCT were found novel, inventive, and industrially applicable. In the two Actions issued, the Japanese Examiner was concerned with minor ambiguities in

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[31] Letter from G. Franklin Rothwell, attorney representing Joon Won Park, to Daborah David, Examiner, USPTO (Oct. 3, 2005).

[32] Letter from John Mcpherson, Primary Examiner, USPTO, to Rothwell, Figg, Ernst, & Manbeck, P.C., attorneys representing Joon Won Park (Dec. 29, 2005).

[33] *In re Van Geuns*, 988 F.2d 1181, 26 U.S.P.Q.2d 1057 (Fed. Cir. 1993).

[34] Letter from G. Franklin Rothwell, attorney representing Joon Won Park, to Daborah David, Examiner, USPTO (Mar. 13, 2007).

[35] *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966).

[36] *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007).

[37] Japanese Patent No. 4,032,104 (Nov. 2, 2007).

[38] KOREAN INTELLECTUAL PROPERTY OFFICE, INTERNATIONAL PRELIMINARY EXAMINATION REPORT, International Application No. PCT/KR2002/001714 (Feb. 28, 2004).

some of the claims and also a double patenting situation that seemingly existed with respect to another Japanese patent filed by the Applicants on the same day.[39] No objection was raised against claim one as amended under Article 34 PCT during the International Phase, and it was left untouched by the applicant during prosecution in Japan.[40]

IV. DISCUSSION

The case studies discussed above show no clear differences in terms of patentability and breadth of granted claims between the United States and Japan. Insight into recent developments, however, can be found in statistical differences in grant rates, and the policy decision to permanently implement the Patent Prosecution Highway between Japan and the United States.

1. Tougher Patentability Standards in Japan

As noted in the Introduction, the JPO has now made it a policy to try to grant only "stable" patents. The asymmetry in reversal rates of JPO decisions by the Japanese Intellectual Property High Court (IP High Court) are part of the reason for this position. Of the JPO decisions from 2004 that have been reversed, 53.2% of decisions in which patents were found valid by the JPO were reversed by the IP High Court, while only 3.0% were reversed when the JPO found the patents invalid. This trend is consistent over several years. Apparently, the IP High Court finds the JPO too easy for patentees. This places pressure on the JPO to raise the patentability standards that it applies.

Differences in ease of obtaining patent protection in different jurisdictions is illustrated by the comparative review of the USPTO, EPO, and JPO carried out by the International Association for the Protection of Intellectual Property of Japan (AIPPI Japan) under the commission of the JPO. This study resulted in a report that was published in March 2007.[41] The report has three parts: review of current examination practices in Japan, the United States, and the European Patent Office (EPO); statistical analysis of cases among the JPO, USPTO, and EPO; and reports on hearings carried out with corporate patent counsels and private practice attorneys in Japan, the United States, and Europe.

The statistical study shows a number of difficulties stemming from different legal and examination systems. Some data taken from this study is shown below, indicating that the percentage of allowance is clearly lower in Japan.

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[39] Japanese Patent No. 4,032,105 (Jan. 1, 2005).

[40] Japanese Patent No. 4,032,104 (Nov. 2, 2007). The granted claim one reads as follows:

A method for high resolution patterning, comprising:
(a) forming a self-assembled aminosilylated or aminothiolated monolayer on a substrate and processing the surface of the self-assembled aminosilyalated or aminothiolated monolayer with an aromatic aldehyde having a substituted terminal ring, to thereby form an aromatic imine monolayer having the substituted terminal ring on the substrate;
(b) selectively removing the substituents from the aromatic imine monolayer; and hydrolyzing the aromatic imine monolayer.

[41] INTERNATIONAL IP LEGISLATION RESEARCH OFFICE, INTERNATIONAL ASSOCIATION FOR THE PROTECTION OF INTELLECTUAL PROPERTY OF JAPAN, COUNTRY-BY-COUNTRY COMPARATIVE STUDY AND RESEARCH ON INDUSTRIAL PROPERTY SYSTEM (2006).

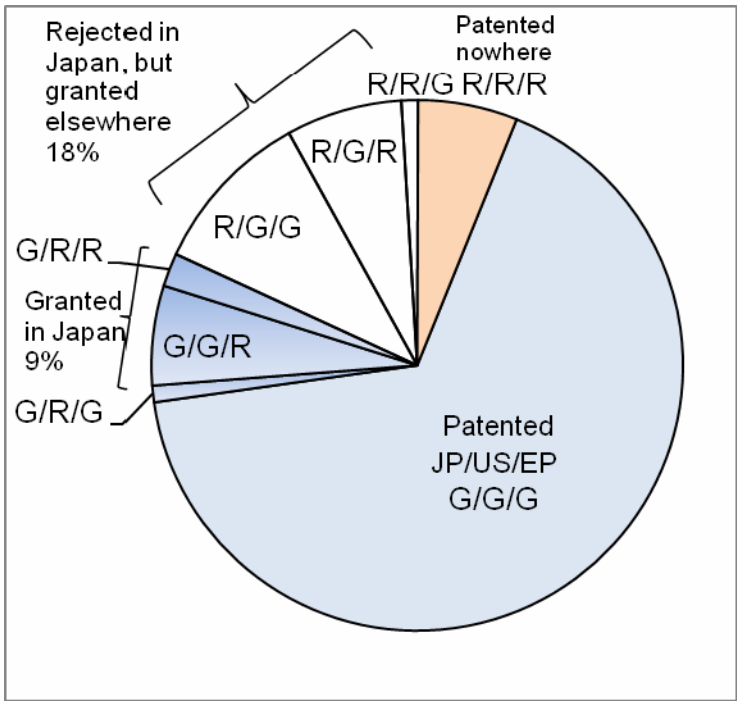
FIGURE 1: COMPARISON OF JPO, EPO, AND USPTO GRANTS AND REJECTIONS FROM A SAMPLE SET OF 625 PATENT FAMILIES[42]

Application Result Class			# of Cases	%
JPO	USPTO	EPO		
Granted	Granted	Granted	414	66
Rejected	Granted	Granted	60	10
Granted	Rejected	Granted	9	1
Granted	Granted	Rejected	37	6
Granted	Rejected	Rejected	23	2
Rejected	Granted	Rejected	44	7
Rejected	Rejected	Granted	9	1
Rejected	Rejected	Rejected	39	6
Total			625	100

It was determined that 625 families of corresponding patent applications that were finally and terminally disposed of existed among the USPTO, EPO and JPO. In 72% of those studied the examination result was consistent: either grant or rejection/ abandonment among the three jurisdictions. In 18% of the cases Japanese applications were rejected while counterpart applications were allowed by USPTO or EPO, or both. On the other hand, only 9% of the overall applications were granted in Japan and rejected by USPTO, EPO, or both. Therefore, statistically speaking, the examination of the JPO is toughest among the three Patent Offices covered by this investigation, and the authors find this to be consistent with their prosecution of patent applications in Japan. As noted in the report, however, it is difficult to ascertain the exact reason for rejection or abandonment. These results arguably reflect the level of inventive step adopted by the JPO, because the lack of inventive step is the rejection most commonly issued.

[42] *Id.* at 65. "Granted" includes grant as a result of continuations in the United States. "Rejected" includes rejections in Japan, rejection or abandonment of a whole application family in the United States, and/or rejection or withdrawal before the EPO after or without requesting examination.

FIGURE 2: GRAPHICAL REPRESENTATION OF APPLICATION RESULTS FROM A SAMPLE SET OF 625 PATENT FAMILIES FILED WITH THE JPO, USPTO, AND EPO[43] *



Patented JP/US/EP G/G/G	66%
G/R/G	1%
G/G/R	6%
G/R/R	2%
R/G/G	10%
R/G/R	7%
R/R/G	1%
Patented Nowhere JP/US/EP R/R/R	6%

*The designation of granted ("G") or rejected ("R") in a particular jurisdiction is signified in the following order: JPO/USPTO/EPO.

2. Patent Prosecution Highway

The other development is the Patent Prosecution Highway (PPH). This started between the JPO and USPTO as a pilot project running from July 2006 to January 2008.[44] It is now in full operation between the JPO and USPTO.[45] Other Patent Offices, such as the Canadian Intellectual Property Office, Korean Intellectual Property Office, United Kingdom Intellectual Property Office, European Patent Office, Intellectual Property Office of Australia, and the Danish Patent and Trademark Office, have also begun to participate.[46] The basic idea of the Patent Prosecution Highway is simple: if a patent is granted by one Patent Office, a corresponding application pending before another participating patent office can enjoy

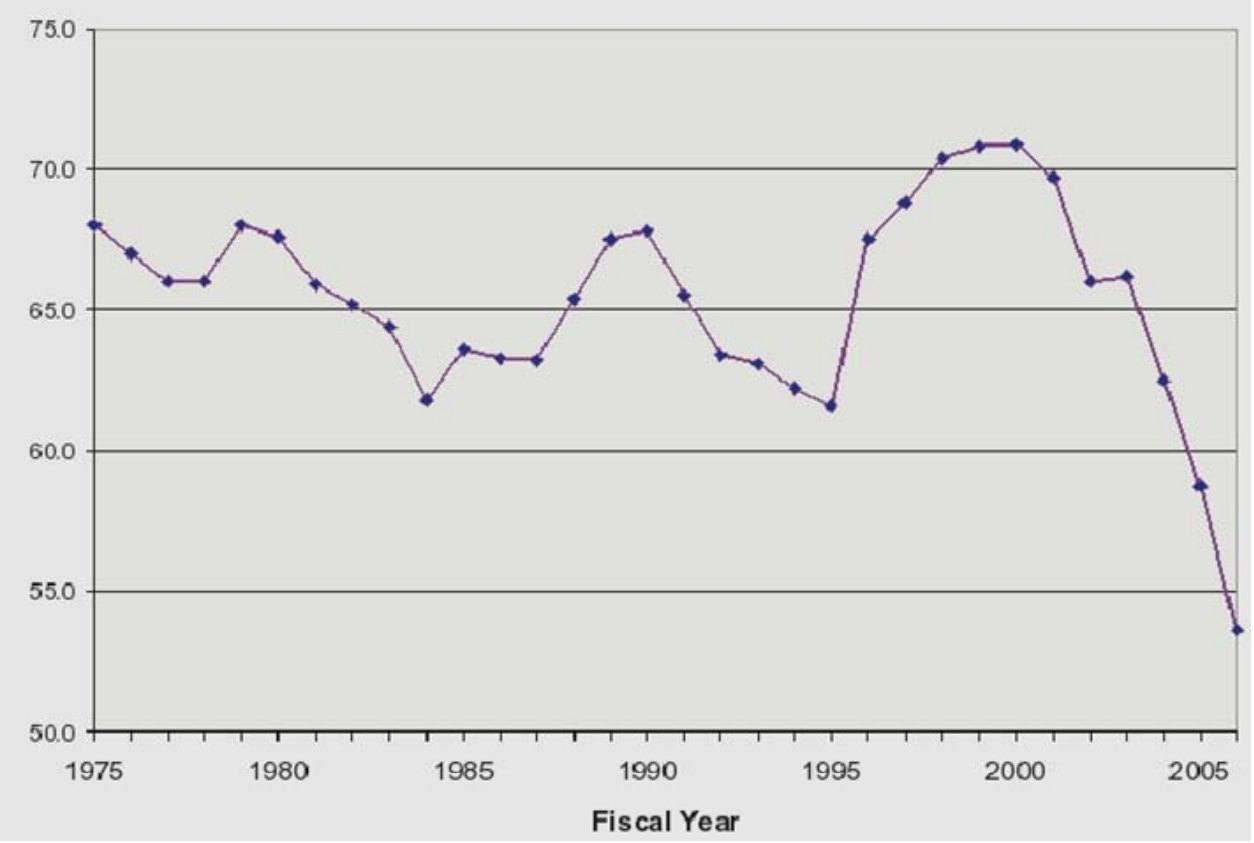
[43] *Id.* at 65.
[44] Press release, USPTO, U.S. and Japan To Pilot Patent Prosecution Highway (May 24, 2006).
[45] Press release, USPTO, USPTO and JPO to Implement Patent Prosecution Highway on Full-Time Basis (Dec. 21, 2007).
[46] Press release, USPTO, USPTO Expands Patent Prosecution Highway Network to Canadian, Korean Patent Offices (Jan. 28, 2008); Press release, USPTO, USPTO and United Kingdom Intellectual Property Office to Pilot Patent Prosecution Highway (Sept. 4, 2007); Press release, USPTO, USPTO and EPO to Pilot Patent Prosecution Highway (Apr. 28, 2008); Press release, USPTO, USPTO and IP Australia to Pilot Patent Prosecution Highway (Apr. 1, 2008); Press release, USPTO, USPTO and DKPTO to Pilot Patent Prosecution Highway (Nov. 3, 2008). Additionally, the German PTO has entered into an agreement with the JPO. Press release, Japan Patent Office, Commencement of the Patent Prosecution Highway Pilot Program between the JPO and the GPTO and Expansion of Eligibility for the Patent Prosecution Highway Pilot Program between the JPO and the UK-IPO (Mar. 3, 2008).

expedited examination if the pending claims are amended to correspond to the granted claims. About 500 cases have taken this route between Japan and the United States. [47]

The PPH has become a powerful tool for applicants in Japan, particularly when coupled with the use of divisional applications. It makes it possible for a U.S. applicant to quickly obtain a Japanese patent on claims that directly correspond to the U.S. granted claims, and, with a divisional application, retain the opportunity to prosecute claims that may target products that will possibly appear later in the Japanese market.

The authors have found, under the PPH Japanese Examiners seem to be biased to give weight to the results of the U.S. prosecution, and thus more likely to give allowance based on the examination results in the United States. Offsetting this, it is important to recognize that the U.S. rate of allowance has been trending downward, and this was occurring even before the *KSR* decision in 2007. The downward trend in the U.S. rate of allowance is dramatically reflected in the following graph:

FIGURE 3: USPTO ALLOWANCE RATES[48]



[47] Press Release, Japanese Ministry of Economy, Trade, and Industry, USPTO and JPO to Implement Patent Prosecution Highway on Full-Time Basis (Dec. 21, 2007) (227 by Japanese applicants and 157 by U.S. applicants), http://www.meti.go.jp/press/20071221001/01_press_HW.pdf.

[48] John Doll, Commissioner for Patents, Presentation at AIPLA-FICPI Colloquium, Managing Growth While Enhancing Quality (June 9, 2007) (slide 10), http://www.ficpi.org/library/07AmsterdamColloqu/8-USPTO-Doll.pdf.

V. PRACTICAL TIPS

1. Practical Tips for U.S. Applications or PCT Applications Designating the United States

With the *KSR* ruling, applicants in the United States may have a higher hurdle to overcome potential obviousness-type rejections from the USPTO, particularly in the bio and chemical arts. They are not, however, left without recourse. For example, while *KSR* has provided a set of tests the USPTO may apply in determining whether an invention is obvious, it also provides inventors and patent prosecution practitioners with guidelines to avoid or even overcome obviousness-type rejections. For example, applicants may be able to argue non-obviousness (or inventive step) based on the "teaching away doctrine" to distinguish the claimed invention from prior art, and thus argue that there is no motivation to combine.[49] Alternatively, applicants may be able to show no motivation to combine because each of the prior art references does not teach or suggest the recited limitations in the invention.

2. Practical tips for Japanese applications or PCT applications designating Japan

In order to overcome the recent higher standard for inventive step in Japan, we recommend to potential applicants that it can be beneficial to state clearly the advantages and/or beneficial results over prior art in the Specification. If the lack of motivation or suggestion to combine is not a strong enough argument before the JPO, it may become necessary to rely on unexpected results as the basis of argument regarding inventive step. Having advantages discussed in the as-filed Specification is important, because if they are only argued at a later stage of prosecution the advantages might be regarded as new invention at that stage and thus rejected by the Examiner or a panel of judges.

Since it is generally discouraged to have strong and narrow object statements in the Specification, we recommend providing statements of advantages or superior results in connection with examples. The Japanese Examiners, as well as judges, do not weigh each statement in the Specification based on where the statement appears in the Specification. Thus, for instance, statements made for each example could be a basis for supporting the inventive step of the claimed invention.

VI. CONCLUSION

More than ever, nanotechnology applicants will have to choose carefully how to apply their resources to obtain protection for their pioneering inventions in the global patent system. Strategies such as the ones described in this article should be considered in order to reduce the expenditure of precious budgeted funds that could otherwise be spent on research and development instead of legal expenses.

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[49] *See* Manual of Patent Examination Procedure, §2145 (consideration of Applicant's Rebuttal Arguments).