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IP Friends Connections



This Magazine is published as part of the Intellectual Property Cooperation in Human Resource Development Program of the Japan Patent Office. The aim of this Magazine is to follow up on training programs through the dissemination of information to IP Friends, those who have completed training courses of the above program. We very much hope that the information in this publication related to intellectual property, and the comments from either IP Friends or lectures, will prove beneficial to you in your work.

[The meaning of 縁 (Enishi)]

“Enishi” refers to the bond created between people when encountering someone they were destined to meet. We have chosen this term as the title for our publication because we are all members of the Intellectual Property community, and the bonds created between us extend beyond national borders. We hope that you will use this informative publication to deepen the “Enishi” you have created with your IP Friends.

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FY 2014 Follow up Seminar in the Philippines

(Sep. 24-25, 2014)

Seminar in Manila

The Japan Institute for Promoting Invention and Innovation (JIPII) held a two-day follow-up seminar in Manila, the Philippines, on September 24 & 25, 2014. The seminar was hosted by the Japan Patent Office (JPO), the Intellectual Property Office of the Philippines (IPOPHL), and the Intellectual Property Alumni Association (IPAA) Inc. in the Philippines, and was conducted by the Japan Institute for Promoting Invention and Innovation (APIC - JIPII). The last time that it was held in the Philippines was two years ago, and this marked the eleventh one since 2000.

The seminar was attended mainly by IPOPHL staff members, attorneys, and law firm employees, along with a number of people from universities and companies. As we had tried to publicize the seminar as widely as possible with the assistance of JETRO Manila and the Japanese Chamber of Commerce and Industry of the Philippines, Inc., it was also attended by people from local Japanese-affiliated companies. With the many Filipino IP alumni also participating in the seminar, the total number of participants over the two days came to 235.

The theme of the seminar was “Technology Transfer and Licensing of Intellectual Property Rights (IPR) in a Knowledge-Based Economy.” At the beginning of the seminar, speeches were delivered by Ms. Divina Garcia Espadilla Pedron, President of IPAA Inc., Ms. Carmen G. Peralta, Director IV of the Documentation, Information and Technology Transfer Bureau of IPOPHL, and Mr. Kunihisa Ito, Director of the International Cooperation Division of JPO.

The program consisted of four sessions, which were conducted over two days. The session themes for the first day were “IPR as Profitable Assets” and “Case Study of Technology Transfer and Licensing.” On the second day the themes were “Best Efforts in the Licensing of IPR” and “Licensing of IPR in the Public/Government Sector,” and experts from both Japan and the Philippines gave lectures.

Mr. Kunihisa Ito, Director of the International Cooperation Division in the Policy Planning and Coordination Department of JPO delivered the Special Speech: “Japan’s Efforts in Promoting Intellectual Property (IP) Policies” and Ms. Carmen G. Peralta, Director IV of the Documentation, Information and Technology Transfer Bureau of IPOPHL delivered the Keynote Speech: “Background on the Rise of Technology Transfer and Licensing in the Philippines.” Lecturers on the Japanese side included Professor Kiyohide Okamoto from the Graduate School of Intellectual Property of Osaka Institute of Technology (OIT), who gave lectures on the subjects of “Viewing IPR as Profitable Assets through Licensing” and “Common Issues and Future Prospects in the Licensing of Trademarks and Patents”; Mr. Yoshihiro Endo, a department manager from the Intellectual Property Division of Honda Motor Co., Ltd., who gave a lecture on the subject of “Case Study: Presentation from a Japanese company that is engaged in licensing”; Mr. Kazuhiko Hashimoto, Senior Associate at Kansai Technology Licensing Organization Co., Ltd., who gave a lecture on “Technology Transfer through Industry-Academy Collaboration in Japan”; and Mr. Takao Ogiya, Director General of the Asia-Pacific Industrial Property Center, of JIPII (APIC-JIPII), who gave a lecture on “Experience of IP Law Amendments and National Efforts on Technology Transfer and Licensing in Japan.”

On the Philippines side, in a manner corresponding to the above-mentioned lectures, Attorneys Patricia A. O. Bunye, Ms. Nicole Villano, Professor Josephine Santiago, Manuel Lope,

Jr., and Elizabeth Pulumbarit gave lectures. The participants eagerly listened to the individual lectures and asked many questions, which showed their high awareness of the subject of intellectual property.

On September 26, we held a gathering of IP alumni in the Philippines. In addition to this seminar, IPAA actively conducts various activities, such as holding events with universities and other related organizations and issuing bulletins. There is close cooperation among IPAA officers, and they made contact with each other here and there around the site during the breaks and other opportunities.



Mr. Kunihisa Ito, Director, International Cooperation Division, Policy Planning and Coordination Department, Japan Patent Office



Ms. Carmen G. Peralta, Director IV, Documentation, Information and Technology Transfer Bureau, Intellectual Property Office of the Philippines



Group photo of all participants including lecturers and IP alumni

Training course experience in Japan

GOOD COOL JAPAN!

Mr. Kalibbala Nyanja Phillip
Senior Registration Officer, Intellectual Property
Uganda Registration Services Bureau (URSB)
Kampala, Uganda
(JPO/JPR Training on IP Administration for LDCs to 22-29 July, FY 2014)



Mr. Kalibbala Nyanja Phillip

Hi IP friends, I salute you all.

First of all, let me take a few seconds to pray for the people of Japan. As I write this article, the global press is awash with horrifying news that the typhoon that battered the Philippines in 2013 is heading towards Japan. Hardly three years after the devastating tsunami, the people of Japan should not experience a natural calamity of such magnitude in such a short time. I pray that it will pass.

Coming to Japan

I still remember sometime in June, our Human Resource Officer placed papers on my table and said, *“Mr. Kalibbala, you are needed in Japan!”* “What?” I asked, *“Japan?”* “Yes”, he responded, *“That’s right!”* This was very exciting news. It was a beautiful gift for that day, and for the month of July. All my life, I had dreamt of travelling to these Super Countries. I had known that Japan was the second biggest economy after the USA. I did not know what this meant in terms of life, but I thought to myself that if any country can be compared to America, then it must be big! Apart from the Ninja and Samurai movies I had watched as a child, the only thing closer to me from Japan was technology merchandise. In Uganda, brand Japan seems to be a household name among traders and consumers, though the unfortunate bit is that most of the merchandise is what we call “second-hand reconditioned”. Uganda also seems to be a heartland for Toyota automobiles of all models. I used to wonder to myself, if cars that fill Ugandan roads come from Japan, how colossal is the manufacturing industry in such a country? So here I was, about to find out. I was heading to Japan, the heartland of Industry!

We landed at Haneda at around 5am. First surprise, at 5am it was already broad daylight and warmish, as if it was 12pm in East Africa. We were given a semi-VIP reception, considering that the wall-to-wall carpets at Haneda were pink, and not the Presidential red. Haneda is quiet and calm. There is no noise to inconvenience anybody else. I had never been among so many people talking and laughing but actually inaudible.

We boarded our train and headed for TKC. Since this was my first time in a first world economy, I thought that people may behave different from the way we behave back home. However, from the time we checked in at Haneda, much of everyone behaved ordinarily to-

wards us like they behaved towards everybody else. We were warmly received on our arrival at the HIDA hostels, then were given some orientation on what to do and what not to do. I checked into my room on the 6th floor and slumped into morning sleep, my body exhausted after making the more than 11,000km flight from East Africa to East Asia.

The next morning, I woke up to start the day. My room was brightly lit with the natural morning light. But when I looked outside my window, there was no human activity and the trains were still packed in their stations. Something was not right here. Either the Japanese are long sleepers, or it's a holiday. I then checked to confirm the time on my head-side digital clock. It was 3:30am! I checked all my watches and clocks as I had them and they all confirmed this time. I was outside East Africa indeed. Never has the day ever broken before 6:30am. This was indeed surprising. I did not sleep again - it would have seemed like taking a day nap.

That morning, Ms. Kazumi Kinoshita was on hand to take us through the procedures of leaving TKC and boarding the 9:10 am to Kasumigaseki. The lecture room at the JIPII was well lit, organised and clean, and the desks were plastic grey. Ms. Kinoshita took us around the office and the various floors, showing us the library, the computer room for internet, and the lounge where we could get ourselves something to drink if needed. I thank Ms. Kinoshita for her tireless industry.

Soon after this, we got down to the real business of training and learning. The training was tailor-made for beginners of IP from LDCs. It was elementary giving us the basics in IP. The organisers assembled the best lecturers for the training. No trainer was of low caliber; Mr. Shin-Ichiro Suzuki (Patent Attorney), Professor Masayoshi Sumida (Tokai University), Mr. Takashi Nakayama (former Executive MD of JIPA), Mr. Masaki Okamoto (WIPO), Mr. Mit-suhiro Takasaki (Engineer Inc.) and Professor Mika Yamana (Kansai University). Their papers were simple to understand and pictorial. The lecturers mostly explained what was contained in their papers at the same time as answering occasional questions. The sessions were lively. We evaluated the lecturers at the end of the training and they all scored highly. In particular, I remember the lecture of Professor Mika Yamana of Kansai University. Even though she spoke less, she had a profound effect on me. She lectured on the use and benefit of genetic resources for LDCs. She let us know that IP can transform society as it did for Japan; that at the end of the 19th Century, Japan was at the level where many LDCs are today; that Intellectual Property goes beyond the creator and benefits wider society, including the government. This last point was important because in Uganda we still take creativity to be the sole benefit of the creator.

Lectures were not all that we had. Every trainee was equally excited to be in Japan, in Tokyo! At break times, someone would come up and say, *"Hi, have you seen the McDonald's across the street? We should go check it out, I have never eaten at a McDonald's before"*, or, *"Have you checked out the ¥100 shop? Oh it's cool, every item is at ¥100 and are of high quality"*. One afternoon after lunch, someone came back to class and told us, *"Let's go in the evening and see the shoe shop around the corner, it has high quality men's shoes at affordable prices"*. On another occasion, someone would come up and say, *"Someone has told me of a cool place, we should check it out in the evening after class"*.

So, it was a bee-hive of activity and excitement, always having something to do or something to check out, either within the day or in the evening after lectures. That's how I ended up in Asakusa, the must-visit tourist hub that was well-lit, clean and organized, and had the five-storied pagoda, beautiful shrines, and the twin statues of Buddha. I ate my sweetest ice cream in Asakusa. It was there that I watched the fireworks display during the fireworks festival. It was a marvel!

We spent a weekend in Japan. Most of the trainees looked forward to this. It was going to be a weekend of shopping, visiting, exploring and, if possible, travelling outside of Tokyo. It was a sunny Saturday, humid, and people were ready to move. They went to all sorts of places on the Metro map; Shibuya, Akihabara, Asakusa, Ueno, Shinjuku, Shimbashi, Ginza, Tsukiji Market, and Kabukiza. It seems that people went anywhere the Metro stopped or where a shopping center could be found! I, together with my colleague from Tanzania, met up with a Japanese friend of ours who knew Swahili and headed for Ueno. I was surprised by the availability of merchandise in Ueno. Almost everything for convenience is there and available in different price groups. There were watches for ¥700,000, as well as ¥1,000. There was jewelry, shoes, toys, bags, apparel, you name it. For the first time since I arrived in Japan, I ate Japanese dishes different from what I had eaten at the TKC. It was tasty, cultured food. Our Japanese friend was willing to take us around and show us everything. I bought so many good things in Ueno that I had to buy a bag to carry them. But the most prized item I bought was my Marshal watch - the jewel in my crown of purchases. We visited the photo shop booths and had lots of fun taking photos.

After Ueno, we headed for the prefecture of Kawasaki, where our friend wanted us to have a football work-out session with her friends. It was great fun. We got to the mini plastic football facilities, acquired training gear and joined her team-mates for a weekend work-out. It was a good football experience in Japan that left us all sweaty.

After that weekend, everything was pretty much done in Japan and we braced ourselves for departure. The remaining two days were winding up days both at the APIC and the TKC. One of the most everlasting memories I carried from Tokyo was the good nature of the Japanese people. It is less expected that people can go out of their way to make other people comfortable. Our selfish and self-driven nature as human beings is against such character. From the time we boarded the first train to TKC, we came across very good and willing-to-help people. Even with the failure to communicate, people still tried to be of help.

But I found communication to be one of the biggest challenges against free interaction. When people cannot reach each other by way of communication, they cannot make breakthroughs; finding places, building rapport, doing business, etc. During my stay in Japan, I went through some experiences that I found frustrating because of communication failures.

During one of these experiences, we went shopping. While there, we found a lotto game where one had to buy an item at a shop and then come to this place with their number to spin the tiny wheel. The people who were running this game were so excited and happy to see us. We wanted to get into the game but did not know the instructions. The people who were running the lotto kept on telling us in Japanese what to do, while we also responded in English. At some point, everyone came to help us understand the instructions but they were

also speaking in Japanese, with some trying very little English. In the end of it, we all gave up the effort and we left without each benefitting from the other.

Another time, I got lost on my way to TKC after disembarking from the train at the Kita-Senju Station. I spent about two hours trying to locate the hostel. It was like a walk in a maze, very frustrating to be always going back where I began. I got tired and stood at the Tokyo Denki University (TDU), hoping to be found by one of my colleagues. It was rainy and getting dark. As I became desperate, I saw a young man who was about 16 years old. I immediately grabbed him and asked him to direct me to the TKC. I communicated in English, while he communicated in Japanese. I then asked him for a pen and I scribbled the initials TKC. Even this was a problem because it was not in Japanese characters. I asked him to look up the place on his cellphone using Google Maps. After much struggle, he finally did, then using the phone, he led me to the TKC. This was a miracle of kindness, but the struggle we both went through to achieve this result consumed about 40 minutes.

Through these experiences, I realised that a solution has to be found for the language barrier problem for humanity to easily relate. It is very frustrating and almost irritating to be unable to reach out to people who are very willing to reach out to you. Oh, how I wish the IP world could come in to cover this gap. We could invent a gadget that might be able to translate languages where everyone continues to use their own language while the gadget does the translation. Technology has greatly moved to overcome seemingly impossible challenges, why can't we use technology to also overcome this one? We need to break down this barrier and reach out to each other more conveniently.

We left Japan on Wednesday 30th July. I remember that morning as we sat in the black sofas of the lounge area of the TKC, I thought to myself, *"I could stay a little longer in Japan. I have not had enough of it"*. When I discussed this issue with my other friends, I noted that they silently harboured the same sentiments! But as all good things come to an end, Japan had to come to an end, too. We boarded our train to Narita back to our respective countries.

Goodbye good cool Japan, so long. I know destiny will make us meet again.



Figure 1: Flags of the participants that attended



Figure 2: Getting tickets for the 9:10am train



Figure 3: On the train to the JIPI



Figure 4: A lunch meal in Ueno



Figure 5: After the football game in Kawasaki



Figure 6: A group photo of the trainees



Figure 7: Fireworks in Asakusa during the fireworks festival

The Value, Impact and Influence of JPO/IPR- Patent Expert Training

Mr. Manish Kumar
(India)

(JPO/IPR Patent Experts, Sep. 17-Oct. 4, 2013)



Mr. Manish Kumar

Abstract

The JPO/IPR- Patent Expert Training which I attended last year in 2013 had significant value for and impact on my life. The training has enhanced my knowledge base and supported my patent activities in my organization. Overall, it has supported me to create, manage and execute intellectual property activities in my daily working life. Gaining patent knowledge through this training was a once in a lifetime experience in Tokyo, which not only enhanced my IP knowledge but has also changed my perception of social life. The objective of this article is to share a snapshot of my experiences during the training, my success after the training, and the social benefits which I have received; all have had a great impact on my knowledge and helped me become a better human being. Through this article, I will highlight a few areas which have had a really significant positive impact on my knowledge base. The training has helped me not only to understand the technicalities of patents but also the economic benefits. I have corroborated all the knowledge that I received through this training to improve my knowledge base, as well as improve the patent skills of my company employees. This article provides details of my individual success and the knowledge implemented after this training.

Introduction

Today's fast-paced world is becoming increasingly characterized by technology, as well as Intellectual Properties (IP) and their importance. Both technology and IP have greatly affected our lives and we experience IP in almost all our everyday activities. The car we drive has thousands of IPs, the mobile phone we carry has many IPs, and the computer on which I am typing this article has lots of IPs, hence we have to have a basic knowledge and understanding of these IP and their scope. The knowledge base of IP helps us to create and manage IP rights. JPO/IPR Patent Expert Training has greatly helped me to achieve this target. It has helped me to understand various aspects and uses of different IP and especially about patents. The training has helped me to understand the economic value of patents and also how IP are being managed in Japanese multinational companies. During my interaction with highly qualified Patent Attorneys, the discussions provided knowledge about the procedures of patenting at JPO. This training course has participants from various countries such as India, China, Brazil, Malaysia, Indonesia, Thailand, Vietnam and the Philippines. All of the participants were extremely qualified and have proven experience and knowledge in their area of practice. The training class and the study materials provided were the very best and the classes were organized in such a way that all the participants had time to share their views. As for my social experiences in Tokyo, I travelled and visited many places through which I experienced social life in Japan. I met children, elderly people, students and shoppers. In Tokyo, I

discovered a bond between technology and social life, and this was reflected in Japanese technologies that are made to support social life. They are truly “global” technologies but very much fitted for their local community needs.

Story

As I have mentioned, the purpose of this article is to share my areas of success after this training, as well as to share the impact of social life in Tokyo.

The following are a few of the main points of success which I have gained from this training.

- Refreshed and enhanced my patent knowledge base
- Helped me to create strong training resources for my organization
- Helped me to analyse patent claims effectively
- Taught me to handle office action procedures
- Helped me to know the economic value of patents
- Helped me to formulate strategies for patent management
- Changed and improved my social know-how

The Beginning

My manager was a Japanese person who knew about this training, and he suggested that I apply for it. I was very excited after my selection because it was a dream come true to visit Japan, especially Tokyo. Over almost 20 days, the training taught me about various dimensions of patent analysis and development. Since the training, my patent-related knowledge base has improved, and the insight that I received during the whole training is immeasurable. Overall, I had a great experience and much success during my tour and stay in Tokyo. The training provided valuable knowledge for me, and, as a country, Japan has really influenced me with its vibrant culture and well managed technology-oriented society.

The training has improved my perception of:

- Technology Development
- Economic Development
- Social Development

My first day of training was at HIDA, the place where all participants of this training course and other training stayed. The first day was exciting as I met and interacted with people from more than five countries, and all the participants had strong patent and legal backgrounds and experiences. From the following day until the end of the training, all participants regularly visited the APIC building for lectures and interaction with the attorneys. During the course of our training, I visited JPO and also had the chance to see the patent appeal court room. The JPO officials described the procedures of the appeal court and explained the appeal procedures through a live example of a court case. I was amazed to see the uses of technology in the appeal court room that were being used by both sides of attorneys during the hearing process.

This training has improved my knowledge base in the following topics:

- Patent Information searches and patent mapping
- Novelty: Examination point of view
- Inventive steps: Examination point of view
- Patent portfolio management: Visiting Japanese MNC TERUMO LIMITED
- Drafting specification
- Patent Valuation
- Licensing
- Patent infringement suit

I was greatly influenced by the lectures such as “Patent Information Searches & Patent Mapping” provided by Mr. Shin-ichiro Suzuki, a Patent Attorney at Innoperty Patent Office. As well as this lecture, I enjoyed the lectures of Mr. Aoki of Madoka International Patent Office and Mr. Fujimoto on Novelty & Inventive Step exercise, which provided me with a clear understanding of the systems in JPO. The drafting session provided by Mr. Uesugi was something that was really important for me to learn and I am thankful to him for delivering such a wonderful session. It was also important to know about the value of patents which we create every day, and by attending the session by Mr. Ishii of Tokyo University I learned various methods of patent valuation, which were really useful for me. Knowing our own inventions and protecting them is important, but so is knowing about other intellectual property as infringing on somebody else’s IP is an offense which is known as infringement in terms of patents. The session by Mr. Matsuda of Kyoto University was really helpful to understand various aspects of infringement issues.

Overall, the training improved the participants’ awareness and knowledge base about patents, and the process of delivering this training was really admirable. I can summarise that the following were the most well managed aspects of this training:

- People
- Material
- Training session
- Training awareness

Finally, after this training I have successfully implemented and imparted the knowledge base and know-how that I obtained during the course. My success after training has been improved by looking at the following factors:

- Patent analysis
- Patent Management
- Interaction between technology and society

Social Life Learning

During the weekends between our training, I usually travelled to many places in Tokyo with other participants and was able to meet students, shoppers, elderly people and children. I experienced a great social life in Japan and had one very heart-warming experience. I was roaming with my friend in a part of Tokyo and we were in a shop called “Bic Camera”, an electronics mall. Just one day before, my friend had bought a pain massager from another “Bic Camera” shop at a different location. I was also interested in buying one from the same company and brand. The cost of the pain massager I was buying was less than the one bought

by my friend the day before. Hence, it was cheaper than my friend's purchase, even though they were the exact same model and made by the same company. The only difference was that they had been bought at two different locations of "Bic Camera". We explained all the details to the salesperson and requested her to return the extra money that had been paid by my friend the day before. The salesperson was not very comfortable with English, but she really wanted to understand what we were explaining to her, and was eager to solve our problem. She spoke with many people over the phone and continuously tried to translate our conversation over her mobile phone from English to Japanese and explain things to us. Finally, she replied that they would refund the money. It was great hearing this because, in general, in shops like "Bic Camera" - with different owners - the prices can be different in shops at different locations, but here I witnessed coordination between two shops, which is really wonderful. Their approach was really customer-oriented and favoured the customer. I have learned a lot from this incident.

Conclusion

To improve my patent-related knowledge base, it was important for me to have a well-organized patent training, and this training fulfilled all my expectations. I received a good amount of technical information, knowledge, know-how and social experiences, which have exceptionally enhanced my patent skills as well as social responsibilities.

At the end, I would like to thank all the staff of JPO, APIC & HIDA.





Introduction of FY 2014 Long Term Fellowship Researchers

Introduction

Ms. Lata. S. Kapur
(India)

Hello Friends. Let me introduce myself to you. My name is Lata S.Kapur. I am working for the Ministry of Commerce & Industry, Department of Industrial Policy & Promotion (DIPP) in India as Section Officer in the IPR Division.

DIPP is directly responsible for policy on Patents, Trade Marks, Designs and Geographical Indications. Policy on extent and contours of cooperation with foreign countries and bi-lateral and multi-lateral negotiations with foreign countries on IPR issues is also administered by the Department. DIPP is nodal Department for vetting of Memorandum of Understanding (MoU) and Agreements, etc. from an IPR perspective.

Our aim is to develop India during the Decade of Innovation into a major innovative, competitive and knowledge-based economy by strategic utilization of intellectual property as an engine for accelerated growth and sustainable and inclusive development. In the times to come, the country will witness more interaction globally resulting in more foreign collaborations, joint ventures, technology transfers, and public-private partnerships involving Intellectual Property. Almost all MoUs and Agreements have an IPR component in them which needs to be protected efficiently, protecting the interest of the nation and simultaneously respecting the interest of other nations too.

I am here to participate in the Six-Month Study-cum-Research Fellowship Program. While drafting clauses on the IPR component in an MoU or Agreement or License as the case may be due care needs to be exercised to cover all important factors. The area of my research is to identify the Important IPR clauses that should be there in an MoU/agreement/License and framing them in such a way that there is minimal conflict on the conditions laid down regarding protection of Intellectual Property.

I am thankful to JPO and APIC for giving me this opportunity to attend these Training Programmes and do research work Japan which will help me in handling my responsibilities with better understanding and clear concepts. I am also thankful Prof. Yoshitoshi Tanaka, Tokyo Institute of Technology for being my Adviser and guiding me in my research work. I hope to enjoy my stay in Japan and to learn about Japanese culture, work-culture, and IPR awareness programmes.



INTRODUCTION

Ms. Monika Detri
(Indonesia)

My name is Monika Saly Detri. I have been an industrial design examiner for almost seven years at Directorate General of Intellectual Property Rights of Indonesia under The Ministry of Law and Human Rights. This is my second time to Tokyo. I am based at the Asia Pacific Industrial Property Center (APIC), which I had visited before. I now have the good chance to study as a long term researcher for six months at the Japan Institute for Promoting Invention and Innovation (JIPII) under the JPO-IPR Research Fellowship Program.

The substantive examination system in industrial design registration in Indonesia is regulated by the Law of the Republic of Indonesia No. 31 of Year 2000 Regarding Industrial Design (hereinafter referred to as the “Industrial Design Law”), as the result of the ratification of the Agreement establishing the World Trade Organization (WTO) which includes the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). However, protection of industrial design rights has not been realized as stated in the Industrial Design Law under an optimal condition. Indonesia is now designing a draft of the new industrial design legislation aiming at the development of effective industrial design works, which can be adapted to the rapid economic growth in Indonesia.

For these reasons, in this research, Indonesian industrial design practice will be studied and compared with practices under the Japanese system and/or other jurisdictions with references to the minimum standards prescribed by the TRIPs Agreement or the Paris Convention.

The findings in this research are expected to give good input to the Indonesian Industrial Design system by making the feasibility study about the new draft Law. This feasibility study will also help our government to make all the necessary changes in order to establish the new Industrial Design Law.

Moreover, it is my honor to participate in this Six-Month Study-cum-Research Fellowship Program. The efforts from everyone in JPO and APIC-JIPII assisting in my research in Japan are highly appreciated. I am enjoying my stay and learning so much from everyone here. I hope my research will also strengthen the friendship and the cooperation between JPO-Japan and DGIPR-Indonesia.



Ms. Maridit Pedrosa
(Philippines)

My name is Maridit C. Pedrosa. I am an Assistant Professor at the University of Southeastern Philippines (USEP). Aside from my teaching load, I have also been serving on the technical staff of the Innovation and Technology Support Office (ITSO) of our University since 2011. The ITSO is one mandate of the Intellectual Property Office-Philippines which will demystify and democratize the patent system, use it as a tool for national development. My duties on the ITSO technical staff include strengthening our institution capacity with regards to intellectual property, conducting patent searches, patent drafting and rendering assistance in patent prosecution.

It is the objective of a University to undertake and promote collaborative, participatory and multidisciplinary researches to generate knowledge and technologies that will improve the quality of life. University research collaborations are a critical element of the innovation landscape which, in turn, is important in fostering growth in a knowledge-based economy. Thus, my research is focused on the determining factors that hinder or foster University-University International Research Collaboration: An Analysis from the Perspective of Philippines and Japan Academician in the context of research and intellectual property. The result of this study will provide initiatives to the academicians in the Philippines and Japan Universities on how to promote or sustain collaborative research in order to improve outcomes and learn from each other. In particular, it will promote Japan-Philippines Universities research collaboration that will provide new ideas and knowledge, new perspectives, experiences, research techniques and output that will lead to IP generation and management.

It is a great privilege on my part that I was considered in this Six-Month Study-cum-Research Fellowship Program. This fellowship would never have been possible without the support of JPO, WIPO, APIC-JIPIL, GRIPS and my adviser Prof. Koichi Sumikura. Thank you so much for generously sharing your time, effort, expertise and resources. Thanks also to IPO-Phil and USEP for this professional development, to my family for understanding and love, and to all the people I have met that have made my life meaningful and fun. You were all parts and pieces of my IP life's journey.



Contributions from FY 2013 Long Term Fellowship Researchers

My Experience in Japan

Ms. Nuraina Bandarsyan
(Indonesia)



Ms. Nuraina Bandarsyan

My name is Nuraina Bandarsyah. I am from Jakarta, Indonesia, and am a Trademark Examiner at the Directorate General of Intellectual Property Rights (DGIPR), Indonesia. I have been working at DGIPR for almost 14 years as a Trademark Examiner. My job is to conduct the substantive examination of trademark applications.

In October 2013, I received the good news that I was selected to participate in the Six-Month Study-cum-Research Fellowship Program upon the invitation of the Japan Patent Office (JPO). Although this was the second time for me to be invited to Japan, I was still excited and even a little bit nervous when I heard the news. I had mixed feelings! The excitement of knowing that I was going to explore and learn new things in Japan mixed with sadness, knowing that I was going to be so far apart from my loved ones in Indonesia for such a long time. But then I knew that I had to pull myself together because it was really a great opportunity for me to learn and to enhance my IPR knowledge so that I may contribute more to the development of IPR in my country. It was an honor to be selected for the program and I really thank JPO and DGIPR for the opportunity they gave me.

Finally, on October 15, 2013, I was scheduled to leave for Tokyo. Unfortunately, the trip was not as smooth as expected because of a big typhoon “welcoming” me in Tokyo. My flight to Japan was delayed for 8 hours. It was a long and exhausting trip, but it was all worth it when I set foot in Tokyo. The city had changed a lot over the five years since my first visit to Japan in 2009. There were more skyscrapers and English-speaking people. I realized that there were new buildings in the Toranomon and Kasumigaseki area. I think it is because Japan is preparing to host the 2020 Summer Olympics.

The first person I got to know face-to-face was Ms. Satoko Miyazaki, who picked me up at the limo-bus stop, looking all worried because of the long delay. She was so nice and comforting, welcoming me to Tokyo. I felt lucky when I realized that my accommodation was not too far from the APIC building and JPO Headquarters. It was only 15 minutes by foot. It got even better when I finally met the other long-term researcher (there were two of us) and read about my research program in Japan. The other researcher was Dr. MoeMoe Thwe from Myanmar, a small lady with a very big passion for her work. I learned more and more each day that she has a big vision for her country and that she is working hard to make it come true. I was so lucky to have her as my best friend during my stay in Japan. The next day, we went to APIC and I finally met Ms. Yukiko Koyanagi, who is as nice and lovely as Satoko-san, and who showed me the fellowship program agenda. When I read the program, I felt even luckier because Moe-san and I were given the opportunity to visit the JPO Commissioner, Mr.

Hideo Hato. Yukiko-san and Satoko-san were also excited. When I received my fellowship program schedule, I was happy to realize that it was going to be a very broadly encompassing program, and I felt confident that my research in Japan would go well.

Now for a brief explanation about my research. As I mentioned before, I was selected to be a long-term researcher in the JPO Fellowship Program for IP office staff or IP professionals in developing countries. I was invited to do research in Japan for 6 months. My program ran from October 1, 2013 to March 30, 2014. When my office nominated me, I decided to write a comparative study on the accession to the Madrid Protocol System because I think it is the right topic since Indonesia is now preparing to accede to the Protocol. and I think that Japan is the best Asian country where I can learn about the system. I am confident that learning from Japan's experience, Indonesia will overcome the challenges in acceding to the Madrid Protocol.

I hope that the results of my research will help DGIPR complete a feasibility study on the Madrid Protocol and help the Indonesian Government make the necessary changes regarding its accession to the Madrid Protocol, so that Indonesia can meet the 2015 deadline. I also hope that the results of this research will give more information to DGIPR about promoting public awareness and how to support Madrid Protocol users in the future.

During the program, APIC and JPO provided us with a conducive environment for conducting independent studies, with guidance from professors, training courses on topics related to our research themes, visits to the institutions necessary for the studies, and an internship at related IP firms.

The Fellowship Program

In writing my research report, I was advised by Prof. Chikako Hashimoto from the Graduate School of Innovation Studies at the Tokyo University of Science. Later, I called her "Hashimoto-sensei". Hashimoto-sensei and I had weekly meetings to discuss my research. I admire Hashimoto-san for her deep knowledge about IPR and her work ethics. I also feel very close to her because she is a very considerate and loving person. I think of her as my "mother" in Tokyo. I learned so much from her and I really thank her for her exemplary guidance, monitoring, constant encouragement, and also, friendship, throughout the course of this research report.

Later on, Moe-san and I were given the opportunity to visit the JPO Commissioner on November 8, 2013. It was a rare occasion and we were so honored and happy to be able to meet Mr. Hideo Hato in person. Our luck did not end there, because at the end of our program, we were also given the opportunity to meet with the JPO Commissioner and JPO Executives (Director General, Directors and Deputy Directors) on March 28, 2014. The meeting was basically a review of our program, our impressions of Japan and our expectations regarding cooperation between our respective countries and Japan. It was only a 20-minute meeting but was very useful for us.

To support my research, I was given the opportunity to attend training courses and seminars on topics related to my topic. I also had the opportunity to engage in on the job

training at JPO and visit the Developing Country Cooperation Section of its International Cooperation Division, Policy Planning and Coordination Department. I also had the opportunity to interview JPO officials in the International Trademark Applications under Madrid Protocol, Application Division, Trademark and Customer Relations Department on February 20, 2014, and officials at the International Trademark Application Examination Division Trademark and Customer Relations Department on February 25, 2014. I took part in study visits to big companies such as Fuji Xerox, Toppan Printing, Honda and Asahi Co. Ltd. Hashimoto-sensei also arranged meetings with companies such as Sanrio and Calpis to help me with my research.

On December 6, 2014, I gave my Country Report Presentation. Many people attended, including my advisor, Hashimoto sensei, and JPO officials. I was glad that it went well and that I was able to answer all the questions respectfully.





The Internship Program

As part of the fellowship program, I had to do a three-week internship at one of the biggest and the oldest law firms in Japan, Asamura Patent Office. The office is big and sophisticated and located in Tennozu Isle. The view is also fantastic; you can actually see the ocean from the office. The firm itself was established 123 years ago. Under this firm, there is Asamura Law Office, which maintains a network with business partners in over 200 countries. Forty-four patent attorneys work at Asamura Patent Office and four attorneys-at-law work at the Asamura Law Office which specializes in IP disputes. I had the privilege of learning from Mrs. Hiroko Hirayama, my internship coordinator. She was JPO's director of the trademark examination department in the field of machinery and also one of the first four Madrid Protocol Examiners at the JPO when it started the accession to the Madrid Protocol 14 years ago. Hirayama-sensei explained Japan's experiences at that time to me. This information was really useful, and helped develop my research. I also had the chance to learn about the Madrid System and the regular work of a patent firm. For the purpose of my research, I was able to interview Trademark attorneys at the Asamura Patent Office. The firm also arranged a lecture for me by Mr. Haruo Goto on the history of International Treaties, especially the Madrid Protocol and PCT. Hirayama-sensei also arranged for me to meet with an official from the WIPO Japan Office.

The most unforgettable occasion was an Oral Hearing at the Appeal Court. On my last day at the firm, Asamura Patent Office arranged for me to attend an actual invalidation trial at the Appeal Court as an observer. I thank Asamura Patent Office and its IP lawyers, especially Hirayama-sensei, who made all this possible.





During my internship, not only did I learn from the lawyers but I also had the opportunity to do a presentation for them on Indonesian Trademark Registration. It was attended by nearly 20 staff members from the Trademark and Design Department. The question and answer session after the presentation went very well, and I was happy that the attendees said that they were able to better understand the Indonesian system. During my internship program, I also had the chance to get to know everyone in the Trademark Department. They took me to lunch and a farewell dinner in nice restaurants in Tennozu Isle. I really appreciate their warm welcome and friendship.

Apart from the Asamura Patent Office, I also had the pleasure of becoming acquainted with other lawyers, since the Tsukuni Law Firm also organized for me to give a presentation on the Indonesian Trademark Registration System.

The Japan Experience

Did I mention before that I felt really lucky about joining this program? Well, if my Japan experience was an ice cream cone, my social life in Japan was the cherry on top!

My luck got better and better. For example, I didn't have to travel 40 minutes by train to the office like former researchers. I just had to walk 15 minutes to the office, 5 minutes to the train station, and 2 minutes to the convenience stores. I stayed at a weekly mansion called Hotel Mystays Akasaka. I had my own kitchen - a small one but it was good enough to cook simple meals like Nasi Goreng or Gado-Gado. My hotel was located in the Akasaka area, an exclusive or, should I say, elite area, since it is surrounded by government offices and embassies. The nearest embassy was the American embassy, only a ten-minute walk away. It was also near the Roppongi area - only 20 minutes on foot or 10 minutes by train. I used to go to Roppongi Hills to watch movies and to Tokyo Midtown to shop at UNIQLO. It was very convenient for me.

I also had the coolest friends in Japan. My best friend, Dr. Moe-Moe Thwe (Moe-san), the people at APIC such as Yukiko-san, Satoko-san, Mariko-san, Michiko Hiyama-san and Shibuya-san (senior and junior), and even Ogiya-san, were so nice to me. They were true friends and always supported me and accepted me as I was. I thought that I was going to be lonely and miserable, missing my loved ones and all, but, on the contrary, I was very happy and enjoyed my stay because of these friends. I was fascinated by Japan's ability to build such sophisticated

infrastructures yet still preserve the old traditions and buildings from the past. Moreover, I was touched by the sincerity of the people. My circle of friends in Japan has become my closest now. I surely hope that we can meet again in the future.

I experienced three seasons in Japan for the first time in my life. I thank global warming for making it possible. The crazy weather in Japan made me experience the changing colors of autumn, the really heavy snow in the winter, and the lovely Sakura in spring time!

When I first arrived in Tokyo, it was autumn. It was a little bit chilly but I could still consider it pleasant since I had the chance to go to Hakone and see the beautiful colors changing there. In November, I made time to visit Kamakura to see the great Buddha statue and went up the lighthouse in Enoshima. It was a long trip by train but it was worth it, because we were able to see the beautiful scenery.

When winter came, I was lucky as not only did I have the chance to touch snow for the very first time in my life, I could even throw snowballs and make a snowman with my friends. There was so much fun and excitement. The heavy snow was unbelievable. They said that it was the first time in 45 years for snow in Tokyo to fall that heavily. The streets and buildings were all covered in snow, so white and beautiful. I even went to Yoyogi Park just to play in the snow. At the end of March, I saw cherry blossoms blooming at Ueno Park, and it was the first time for me to see and touch the beautiful Sakura.

During my stay in Japan, I had the chance to visit other cities. I went to Yokohama on New Year's Eve to watch the fireworks and see the illumination. At the end of winter, I went to Kyoto for a weekend where I was fascinated by the "modern meets traditional" life of the city. I visited Kinkakuji, the Golden Pavillion, Nijo Castle, Yasaka Shrine, Kitano Tenmangu, and of course Gion! I will never forget my trips to those two cities.

Besides beautiful cities, Japan has a lot of delicious food. I am grateful to my Japanese friends who took me to try the most delicious and interesting dishes of Japan. Besides sushi and udon, I had the chance to try okonomiyaki, takoyaki, monja, sashimi and natto. I love them very much!

I also give my sincere thanks to Yukiko-san and Satoko-san who took me to the Tea Ceremony Club. It was very exciting and interesting to learn that there is a philosophy behind each ritual in the tea ceremony.

Every party, however, even the greatest ones, must come to an end. My days in Japan were the same. Finally, I had to return to my country. The program ended with the Final Report Presentation, presented by myself and Moe-san. Many people attended, including all our advisors, JPO Officials, Mr. Asamura himself from Asamura Patent Office, and representatives from the Global Patent Office, METI, and, of course, the JPO trademark examiners. I was very nervous but became more confident as I explained each slide of my presentation to them. I received many questions, some that were difficult to answer yet very constructive. I was glad that it went well and that I was able to answer each question respectfully. I felt relieved yet sad when it was over, because it meant that I had to leave Japan.

Lastly, I wish to extend my sincere gratitude to my friends and everyone who supported me during my six months in Japan. There are so many beautiful countries in the world, but the sincerity and friendship that I felt in Japan will never ever be forgotten. I hope that Indonesia and Japan will continue to cooperate with each other, and that the relationship between the two countries will become stronger in the future.

With my advisor, Prof. Chikako Hashimoto



APIC friends



Girl Power!



The Great Buddha of Kamakura



The Sea Candle of Enoshima



Kinkakuji, the Golden Pavillion



Kimono Experience in Asakusa



Kitano Tenmangu



Gion, Hanami Koji Street



The Tea Ceremony Club



The Tea Ceremony Club

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Autumn in Hakone



Sakura blooming in spring



Winter in Tokyo

Articles from the former trainees

“Brunei Darussalam” - The Abode of Peace

Ms. Najwa Abdul Majid
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(JPO/IPR Training Course for IP Management, July 7-18, 2014)



Ms. Najwa Abdul Majid

Brunei Darussalam is also known as “The Abode of Peace”. Brunei has the world’s longest ruling family, with centuries of royal heritage dating back over 600 years to 1405, when the first Sultan ascended to the throne during a dynasty for which His Majesty Sultan Haji Hassanal Bolkiah is the incumbent leader and 29th ruler.

History & Background

Brunei’s unique monarchy can be traced back to its early roots of Chinese, Javanese and ethnic Bruneian Malays. The first ruler, Awang Alak Betatar—whose Muslim name is Sultan Muhammad Shah—brought Islam to Brunei, which went on to alter the course of the country’s history.

Sultan Muhammad Shah’s successors aided in the expansion of Brunei’s empire, and in the spread of Islam throughout the island of Borneo and the Philippines archipelago. Sultan Bolkiah and Sultan Hassan contributed immensely to the so-called “Golden Age of Brunei”.


The British Residential System was introduced in 1906, when Brunei became a British protectorate state. Having gained its independence from the British in 1984 during the reign of the current Sultan, the 29th ruler, His Majesty Sultan Haji Hassanal Bolkiah Mu’izzaddin Waddaulah, the Brunei Darussalam is presently a constitutional monarchy with the principles of Malay Islam Monarchy (Melayu Islam Beraja).

Districts & Capital

The capital, Bandar Seri Begawan, is located in the Brunei-Muara District. It is a modern city with wide roads and understated public buildings, and is kept neat and clean. It is constantly developing and has a thriving business area that includes many government departments.

Areas such as Lambak, Kampung Pengkalan Gadong or Tungku Link, Kampung Mata-Mata Gadong, Jalan Muara, Jalan Tutong, Serusop and Berakas have opened promising business projects that have resulted in a steady rise in the number of new buildings, offices, and shopping centres.

Areas such as Kiulap and Gadong house several of Brunei’s largest shopping complexes, and are the main attraction centres for tourists.



Other landmarks include the state-of-the-art Jerudong Park Playground theme park; the Brunei International Airport, which is currently under expansion and refurbishment; the Hassanil Bolkiah Sports Complex; and the ever-busy International Convention Centre (ICC) events hub.

Situated just at the edge of the capital city is the world's largest water village, which is home to over 30,000 people. It remains a favourite amongst tourists, along with other magnificent structures such as the treasured Omar Ali Saifuddien Mosque, the Jame 'Asr Hassanil Bolkiah Mosque, the Royal Regalia Museum, the Brunei History Centre, the Royal Ceremonial Hall, the Parliament House, and most of all, the world's largest residential palace, the Istana Nurul Iman.

Economy

Since their discovery in 1914, Brunei's main export has been oil and gas. Currently, however, the country is beginning to diversify through agri-food and renewable power sources, and is also presently developing Pulau Muara Besar, an island off Muara port, into an International container terminal.

The diversification is being carried out in order to reduce the heavy reliance on the oil and gas resources of Brunei Darussalam, and prolong the exhaustion of its natural resources.

Education and Health Care

Education and healthcare in Brunei are virtually free for all citizens. The country has a world-class public healthcare system and facilities, and also subsidizes a range of scholarships for higher studies within the country or at overseas recognized institutions.

Population

The population of Brunei is just under 400,000 people, who lead simple and unhurried lives with lush greens and food galore throughout the country. Islam is the way of life in Brunei where religion and culture are naturally prioritized. Combined with people's modern-day rationale, this leads to a mix of East and West. Restaurants and cafes dot the city centre and other business areas, where visitors are treated to local, international and even fusion cuisine. Whilst the kingdom plays a major role in the international arena despite its small size, it faces the same global challenges as larger countries do.

Social Customs and Traditions

Islam is the official religion of Brunei, and is practiced by a majority of the population. It has existed for centuries and greatly influences the country's culture, customs and tradition.

The co-existence of Islamic and ethnic cultural influences in daily life has been passed down through the generations, defining 'Bruneian hospitality'. As 70 percent of the population is Malay, Brunei is governed with customary laws in many of the nation's ceremonies.

The Adat Istiadat Department preserves the protocol and dress code of royal ceremonies, which comprise most of the nation's ceremonial celebrations. Malay customs and traditions can be seen most clearly in royal weddings, with the significant use of traditional woven textiles and silver and bronze trays used in exchanging gifts between the bride and groom, to name a few. Many more intricate and beautiful traditional gestures are still practiced today.

Brunei upholds its traditional values whilst developing as a modern country. Politeness, gentleness, respect and decorum are expected when interacting with others, particularly when communicating during dealings at official functions or events.

It is customary for Bruneians to eat with their fingers instead of utensils, and to give gestures of respect and courtesy to the elderly by bending down slightly when passing by them.

When declining food, it is best to respectfully turn down the offer while touching the plate with the right hand.

Shaking hands with members of the opposite sex is uncustomary for Muslims, although nowadays it is becoming quite the norm to do so in a business setting. Public displays of affection such as kissing and hugging are much frowned upon.

These are a few examples of the customs and traditions among the friendly and courteous Bruneian people.

Brunei has an almost 100% literacy rate. Malay is the national language, although English is also widely spoken.

Being a unique economy and having one of the highest standards of living in Southeast Asia, Brunei has managed to maintain its rich cultural heritage in the midst of modernization.

Brunei has also maintained its peace and prosperity with its neighbours Malaysia and Indonesia in particular through its involvement in many international matters led by His Majesty the Sultan and Yang Di-Pertuan of Brunei Darussalam, as well as through participation in various international organizations.

Brunei Darussalam and Britain are allies, and still maintain a close relationship.

Column: “The pleasures of Aging Gracefully”

About the Nobel Prizes



Mr. Takao Ogiya

Mr. Takao Ogiya
Director General of APIC

On October 7, 2014, it was announced that the Nobel Prize in Physics for 2014 would be awarded to three Japanese scientists for the invention of efficient blue light-emitting diodes. These three became the 20th, 21st and 22nd Japanese Nobel Prize laureates following Shinya Yamanaka, a Kyoto University professor, who received the Nobel Prize in Physiology or Medicine for 2012 for his discovery regarding induced pluripotent stem cells (iPS cells). I am very glad because this is a testament to the high scientific and technological capabilities of Japan.

It is no exaggeration to say that the Nobel Prizes are one of the most internationally renowned awards. I took part in the International Exhibition for Young Inventors (IEYI) 2014, held in Jakarta, Indonesia, from October 30 to November 1. In a speech delivered in the opening ceremony, the speaker encouraged the audience by saying, “Let’s aim for the Nobel Prize in the future.” The children in the venue shouted back in unison, “Yes!” This was an impressive sight, suggesting that the Nobel Prizes are known to almost everyone in the world who is interested in science and technology.

The Nobel Prize was established by a Swedish chemist, Alfred Bernhard Nobel, who is famous as the inventor of dynamite. He invented dynamite in 1866. By patenting it in 50 countries and commercializing this invention, he built up enormous wealth. Nobel came up with the idea of using his money for these annual prizes after his brother died in 1888 and a French newspaper mistakenly printed an obituary for Alfred himself under the title, “The Merchant of Death is dead.” The article described him as a person who became rich by finding ways to kill more people faster than ever before. This unusual incident made him recognize the obvious fact that how a person will be remembered by people after his/her death depends on what that person does during his/her life. In 1895, when his heart disease was worsening, he wrote a will leaving most of his fortune to fund annual prizes named after him, to be awarded without regardless of nationality to those who made the greatest contributions to mankind. He died the following year. Based on the Nobel Foundation was established several years later, and has awarded Nobel Prizes since 1901.

Most researchers probably do not conduct research with the aim of winning a Nobel Prize from the start. They must have purer motives, such as a pursuit of truth and taking up the challenge of a task that no one has ever accomplished. In almost all cases, researchers suffer some setbacks along the way. Among those who, suffering numerous setbacks, only a few lucky ones can reach their goals. Among the fruits of the research achieved by these fortunate ones, only a small handful of achievements are recognized as being useful in the real

world. The Nobel Prize then goes to very few of them. This is why it is said that one of the most important things for researchers is to never give up.

Again, researchers do not conduct research hoping to be remembered by many people after their death. I would bet that Nobel simply focused his efforts on the task at hand, which was to find an easier and safer way of handling nitroglycerin. Dynamite, like the use of nuclear energy, was never intended for mass destruction.

However, after Nobel realized that he had been dubbed the “destroyer,” he did all he could for the researchers following him.

It may be true that Nobel established the Nobel Prizes because he wanted to be remembered after his death as a good man who encouraged many researchers to pursue their dreams and have hopes, instead of being as a destroyer. However, I would rather believe that what he really wanted to do was not simply to leave his name, but to give hopes and dreams to many people.

It is undeniably true that a person is remembered by people for what he/she did. However, this does not mean that no one will remember you unless you make a great achievement. Instead, if you are always kind to the people around you, your kindness will live on in their hearts far beyond your lifetime since those people, even if small in number, will remember you for the good you did. Most people do not earn a place in history. However, a person of good character will be remembered long after his/her death by those close to them.

We all have different abilities, different characters and different weaknesses. Nobel Prizes are not awarded to all of us. There is no need to compare ourselves with others in the first place.

Each one of us comes into the world as a unique existence, lives a life, and eventually dies. We often compare ourselves with others, having feelings of superiority in some cases and feelings of inferiority in other cases; we reproach others, blame ourselves, and worry about various problems. What a shame it would be if these things were all we did in our lifetime. Stop comparing yourself with others, respect yourself and live the best life you can. This could be the key to a richly rewarding life. Those who live this way can be kind to others and will be remembered by people after their death.

It is important to live one day at a time. And when I die, I will praise myself for living the best life I could and give myself my own imaginary Nobel Prize medal. I believe this is the way we should live.



Selection from “TOP 100 Japanese Innovations”

Overview

Most innovations involving light-emitting diodes (LEDs), especially blue LEDs, have been produced by researchers and companies in Japan. The research of Junichi Nishizawa (of Tohoku University) led to the widespread use of red and yellow LEDs, but it took a long time to create blue LEDs and many large companies abandoned such research. Finally, research by Isamu Akasaki (Nagoya University) et al., Takashi Matsuoka (NTT), and Shuji Nakamura (Nichia) led to the invention of practical blue LEDs.

With the advent of blue LEDs followed by white LEDs, various light sources have been replaced with LEDs. Not limited to components embedded in various electronic devices such as the backlights of liquid crystal displays (LCDs) and the light sources of scanners, pLEDs have been applied to many types of illumination including streetlights and indoor lighting. The life of a white LED is at least 40,000 hours, which is four times longer than that of a fluorescent lamp. When used for illumination, this feature greatly reduces the labor required for replacement. In addition, the power consumption is 10-40% lower than a fluorescent lamp, reducing carbon dioxide emissions. There is a growing market for automobile LEDs such as for headlights and cornering lights. With the invention of blue LEDs, it is now possible to assemble a module that combines three-color (red, green, and blue) LEDs, so the module can emit any color by changing the output of each LED. Such full-color LEDs are used in destination display boards and information boards. As of 2010, the number of LED packages shipped worldwide reached 106 billion, or 12 billion U.S. dollars, and the market is expected to expand steadily, primarily driven by lighting applications.¹

A laser diode that converts the light from an LED into laser oscillation is used in the pickup for optical discs. Shorter wavelength lasers such as the blue laser in particular have been used for large-capacity optical discs. Laser diodes are also used in laser printers, computer mice, and pointers.

Background of the Innovation

A light-emitting diode (LED) is an electronic device that produces light by passing an electric current through a p-n-junction semiconductor that consists of a p-type semiconductor and an n-type semiconductor. Light emission from a semiconductor has been discovered, studied and reported on since the early 1950s. Following the successful production of single crystals of gallium phosphide (GaP) and gallium arsenide (GaAs), the manufacture of red LEDs and yellow-green LEDs started around the 1960s.²

The history of the research and development of LEDs is linked with the history of semiconductor materials. The term “semiconductor” refers to a material with properties between those of a conductor that passes electrons freely and those of an insulator that does not pass electrons. Since it is possible to control the movement of electrons by changing the material, semiconductors have been used in many applications. In the case of a p-n-type LED, which is a semiconductor, when electrons in the valence band transfer to the conduction band through the bandgap (forbidden band), surplus energy is reduced, causing the emission of light. By

changing the semiconductor material, it is possible to alter the size of the bandgap and the wavelength of light.

Let's look at the details of the mechanism. A p-n-type LED is manufactured by bonding a p-type semiconductor to an n-type semiconductor. The p-type semiconductor is doped with an element having fewer valence electrons than the intrinsic semiconductor so that the movement of electron holes having a positive charge creates an electric current. The n-type semiconductor is doped with an element having more valence electrons than the intrinsic semiconductor, in which the movement of free electrons generates an electric current. Joining the p-type and n-type semiconductors creates a bandgap at the joint that is in an electrically isolated state. Applying a positive voltage to the n-type side extends the bandgap and gradually impedes the electric current. Conversely, when a voltage is applied to the p-type side, electrons and holes go through the bandgap and recombine, releasing surplus energy in the form of light and heat. LEDs use this emission.

The color of light emitted from an LED depends on the size of the bandgap. The bandgap varies depending on the material of the intrinsic semiconductor from which the p-n semiconductor is manufactured and the combination of the elements injected. The larger the bandgap, the greater the energy generated by the movement of the electrons. As photons with greater energy move violently, light with a shorter wavelength is observed. The research on LEDs that started from the emission of long-wavelength and lower-energy red light then became focused on semiconductors that generate blue light with shorter wavelength and higher energy.

There were three obstacles to the development of blue LEDs: (1) Creating a gallium nitride (GaN) single crystal; (2) Replacing part of the gallium with zinc or magnesium with fewer valence electrons to create a p-type semiconductor and realize a p-n junction; and (3) Doping indium to shift the wavelength of the light emitted from the LED, which is ultraviolet due to an excessively large bandgap, back to that of visible blue.

(1) Creating a gallium nitride single crystal

To create a blue LED, it is necessary to obtain a high-quality semiconductor material by raising the purity of the crystal from which the semiconductor is originally created. The creation of a gallium nitride single crystal is largely due to the efforts of Isamu Akasaki and his research group.³ Having transferred from Nagoya University to the Tokyo Research Laboratory of Matsushita Electric Industrial Co., Ltd., Akasaki conducted various studies on LEDs, and in 1973 started full-scale research on blue LEDs. At that time there were three candidates for a blue LED: zinc selenide, silicon carbide, and gallium nitride. Akasaki was attracted by gallium nitride even though the crystal was much harder to create than other substances. It was a physically and chemically stable “tough” material, and so was expected to lead to a semiconductor with stable performance. In 1975, the Blue Light Emitting Research Committee was established as part of the Unprecedented Innovative Technology Project of the Ministry of International Trade and Industry, which was an industry-academia-government consortium for conducting research on blue LEDs and which succeeded by using the HVPE method. The created LEDs were an MIS type, not the p-n type because no p-type crystal was available. Matsushita Electric Industrial tried mass production but abandoned the project midway because of unstable performance.

In his search for a way to grow the crystal, Akasaki introduced the metal-organic vapor-phase epitaxy (MOVPE) method in 1979 and conducted further research. However, Matsushita Electric Industrial shifted its research to the Light Project (by the Optical Measurement

Control System Technology Association) that followed on from the VLSI Cooperative Laboratories, a national project.

To continue his research on blue LEDs, Akasaki returned to Nagoya University. He built a clean room in the university and built a dedicated experimental apparatus by combining the MOVPE equipment inherited from Matsushita Electric Industrial, unused old devices and newly purchased devices.

The single crystal to be created would be thin and formed on another substrate. Akasaki decided to use sapphire as a substrate (aluminum oxide) but the problem was a maximum difference in lattice constant of 16% between the sapphire crystal and the gallium nitride crystal. Akasaki thought that a buffer layer was needed between the sapphire substrate and gallium nitride. Selecting aluminum nitride and four other substances as candidates for the buffer layer, they repeatedly performed experiments for growing a gallium nitride crystal on a sapphire substrate.

In 1985, Hiroshi Amano, who was a graduate student under Akasaki, succeeded in creating high-quality gallium nitride and obtained a colorless transparent gallium nitride crystal. Before then an epitaxy temperature of 1,000°C had been required, but now it was possible to obtain a gallium nitride single crystal by operating an electronic furnace at 500°C, half the usual temperature. The method was later called the low-temperature buffer layer technology. This was almost four years after the beginning of the research using the MOVPE method.

(2) Creating a p-type semiconductor

Following the creation of a gallium nitride single crystal, the next goal for Akasaki was to create a p-type semiconductor by doping an impurity. Replacing part of the gallium atoms with zinc generated the emission of blue light but in an unstable state that did not become a p-type semiconductor. In the summer of 1987, while Amano was monitoring gallium nitride doped with zinc irradiated by an electron beam, he found that the gallium nitride started to emit light. Having found that low-energy electron beam irradiation (LEEBI) created a strong light, Akasaki and Amano borrowed the most advanced electron microscope from Toyota Gosei, their research partner. For compatibility with the LEEBI treatment, they changed the impurity from zinc to an organomagnesium compound. They imported materials and continued their research, and in 1989 they succeeded in creating p-type gallium nitride. In the same year they also built a prototype p-n-junction blue LED.

(3) Doping indium to shift the wavelength to visible blue light

There were still some obstacles to achieving a stable blue LED. First, it was necessary to stabilize the electrical conductivity of the n-type semiconductor. In addition, the excessively large bandgap in the early blue LEDs emitted ultraviolet rays. To obtain visible blue light, the generated optical energy needed to be reduced, so some of the gallium atoms were replaced with indium as a potential solution. Takashi Matsuoka of NTT resolved this problem.⁴ In an effort to catch up with the research by Akasaki et al., Matsuoka repeatedly performed calculations of the chemical reactions. In March 1989, he succeeded in injecting the indium using a large amount of ammonia gas, and then in creating a gallium and indium crystal.

(4) Commercialization of blue LEDs and blue laser diodes

Around 1998, Nichia started researching blue LEDs.⁵ Shuji Nakamura of Nichia went to the United States to study crystal growth at the University of Florida for the purpose of developing blue LEDs. After returning to Japan in April 1989, he bought commercially available

MOVPE equipment and modified it. In the summer of 1990, Nakamura discovered a method for creating a high-quality gallium nitride single crystal. As the temperature of the material gas is high, the gas blown on the sapphire (aluminum oxide) from the side rises by convection. To solve this, he invented a two-flow method that also blows the gas down from above. Finally, he succeeded in creating a high-quality gallium nitride crystal by changing the buffer material from aluminum nitride to gallium nitride.

Nakamura also uniquely customized the creation of the p-type semiconductor, enabling the conversion of gallium nitride to the p-type by performing heat treatment in nitrogen and removing the hydrogen generated from the ammonia gas, which was easier than the conventional method. In 1992, he succeeded in developing practical LEDs, and in November 1993, commercial blue LEDs were introduced. In 1996, blue laser diodes with a wavelength of 376 nanometers were also commercialized. The blue LEDs and the relevant technology were finally ready for market, almost 20 years since Akasaki had started researching gallium nitride. The accumulation of solid, steady research by Akasaki, along with the participation of Matsuoka and Nakamura, led to the creation of blue LEDs which had previously been considered impossible.

(5) Creation of white LEDs

The realization of blue LEDs raised expectations for white LEDs. White LEDs were expected to have a range of applications. In the beginning, the proposed method was to create a white LED by mixing the lights of the three primary colors from red, green, and blue LEDs. However, in this method, there are three peaks in the hue spectrum. Also, the green LED is not bright enough compared to the other LEDs. As an alternative, Nichia developed a method for generating white light by combining a blue LED and a yellow (complementary to blue) emitting phosphor (YAG: Ce, yttrium-aluminum-garnet crystal with cerium added). White LEDs with phosphor were suitable for Nichia which had already been producing phosphors. They provide a natural hue spectrum with a simple structure and were commercialized and put on the market in 1996.

(6) Conclusion: Trends of other materials

There were three candidate materials in the development of blue LEDs.⁶ In addition to GaN (gallium nitride), methods using ZnSe (zinc selenide) and SiC silicon carbide (SiC) were studied. Large companies other than Nichia and Toyota Gosei conducted research assuming that the most likely candidate was zinc selenide. For example, RCA terminated their research on gallium nitride in 1974 and Phillips in 1977. Under these circumstances, after the announcement in 1991 that 3M had succeeded in creating ZnSe blue lasers at the laboratory level, most companies turned their attention to ZnSe. NTT, where Matsuoka was working, also focused its research on ZnSe in 1992, the year that Nakamura succeeded in developing blue LEDs at the laboratory level. One of the reasons why zinc selenide was the most likely candidate was perhaps that the p-type semiconductor was created before gallium nitride. In addition, the characteristics of zinc selenide are similar to those of gallium arsenide used in red lasers, etc., which suggested that it was a promising material.

Notes on notations:

* Company names and product names are the trademarks or registered trademarks of their respective owners.

* Company forms such as “Co., Ltd.” are omitted for simplification.

* Individual honorifics are omitted.

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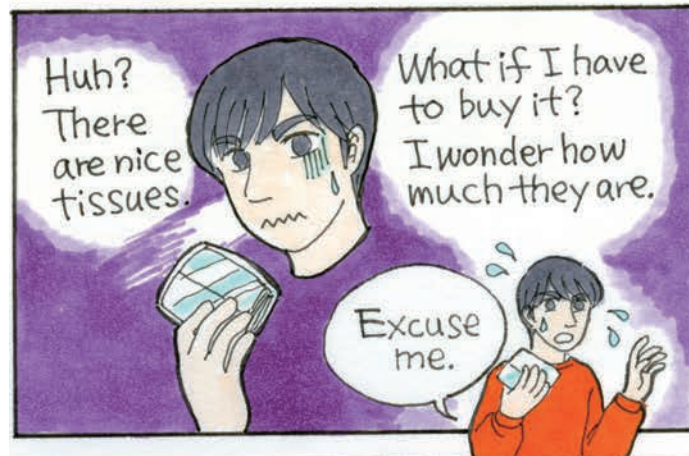
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Editors' Note



The winter season in Japan has begun. It is cold every day, with temperatures under 10 °C—and Japanese food is also changing along with the season.

I am pleased to introduce here the light-emitting diode (LED), which was one of the top 100 Japanese Innovations—and whose blue version also received the Nobel Prize this year. Illuminated lights—which are created from light-emitting diodes—are one of the most typical sights to see on a cold winter's night. Even though such illumination cannot take away the extreme cold of the winter season, looking at its beauty can create its own sensation of warmth.

Many shops also hold winter sales near the end of the year. Around this time, many free pocket tissues containing business advertisements are also handed out in the streets of various shopping areas. Maybe you had such an experience when you were in Japan?

Wishing you all a wonderful year-end holiday. I am looking forward to continuing to improve this magazine, so your opinions and ideas in this regard will be greatly appreciated!



An artificial muscle suit was released for sale in Japan on November 11, 2014.

By wearing two pneumatic rubber tubes on your back like a rucksack it pumps users full of enough power and energy to lift 30kg of weight and bend over effortlessly.

This device was developed by Tokyo University of Science in collaboration with a small manufacturing firm, and is now being marketed under the trade name of "MUSCLE SUIT". It is set to become yet another example of *Cool Japan*, evoking the image of a futuristic gadget popping out from the pocket of Doraemon, a Japanese animation character loved by children across the world.

This product was not invented to turn a childish dream into reality, but rather to address an imminent problem facing Japan: the demographic change characterized by both a drastic increase in the proportion of elderly citizens and a low birthrate. The added power of artificial muscles will allow caregivers to lift frail elderly people and other patients with ease which will prove to be extremely useful in situations such as bath times. The device will also help aging workmen and single women living alone when they have to lift heavy boxes and furniture.

Due to both the severe decline in the birthrate and medical advancement, Japan is facing the world's fastest growing aging population whilst losing its working population at an alarming rate. Today the number of people aged over 65 is 25.1%, but this figure will reach 33% by 2035 (source: Statistics Japan.) This indicates that one out of three people will be an aged person, whose social security costs will in turn fall upon fewer working people.

In order to improve the birth rate, the government is making an attempt to promote more child-friendly working conditions. However, looking at the already very crammed commuter trains and cramped housing of Japan, trying to increase the birthrate only for the sake of making up for falling tax revenue does not appear to be a sound response, particularly while computers and robots are rapidly replacing the human workforce in a sluggish economy and the world is fearing a food shortage due to the global population explosion. What may be required is a more holistic and imaginative approach to this as a global issue.

The population contraction is not all bad news.

First, the crisis has opened up an opportunity for women to improve their social status. The current government has realized that the female work force is Japan's hidden treasure, and is now encouraging women to find their place outside the home and pursue their careers. This is particularly good news for those women who have not been able to find a way out of remaining subservient to their abusive husbands and fathers.

Second, the labor shortage will encourage people to stay healthy and remain in the workforce well into old age. The feeling of being useful and self-reliant is a way of finding your own space in society that gives a sense of self-esteem and happiness. The Muscle Suit could emancipate vulnerable people from feeling trapped in a sense of helplessness and alienation.

The crisis of an aging society, therefore, may prove to be an opportunity for Japanese society to force innovations and growth that has previously been impossible during peacetime. (A.I)

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