

Conference Report

# PSA10: 5<sup>th</sup> International Symposium on Practical Surface Analysis

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## 1. Introduction

The 5<sup>th</sup> International Symposium on Practical Surface Analysis (PSA10) and the 7<sup>th</sup> Korean and Japan International Symposium on Surface Analysis (K-J Symposium) were held in Gyeongju Hyundai hotel, Korea, from Oct. 3 to Oct. 7, 2010. Generally, the ISO/TC-201 committee meeting is held in conjunction with the PSA symposium. This year, the meeting was held in Beijing from Sep. 30 to Oct. 2.

Since 1998, the International Symposium on Practical Surface Analysis (PSA) has been held every three years to improve the international cooperation between the researchers and technical engineers in the fields of practical surface analysis, standardization, and advanced surface analysis techniques. PSA10 was composed of topical sessions which addressed important issues arising from practical applications in these areas. The main fields of PSA10 were (1) standardization and pre-standardization, (2) theory and simulation, (3) data analysis and treatment, (4) novel techniques and instrumentation, (5) applications I (semiconductors, metals, ceramics, composites, etc.), and (6) applications II (bio, organic, and energy materials).

The regular participants of PSA10 were 239 persons from 17 countries (USA, UK, Trinidad and Tobago, Thailand, Taiwan, Syria, Singapore, Poland, Korea, Japan, Indonesia, Germany, France, Denmark, Czech Republic, China, Austria) including 27 invited speakers and 20 industrial exhibitors. Sixty-eight oral presentations, including two plenary speeches and 116 poster presentations were presented. This PSA10 had a far greater number of participants

than the past three symposia, PSA-01(102, Nara), PSA-04 (142, Jeju), and PSA-07 (149, Kanazawa).

## 2. Preparation of Symposium

This symposium was successfully conducted by cooperation of the Japanese and Korean committees. The Japanese committee was responsible for the conference program and registration, and the Korean committee was responsible for the preparation of the symposium site. However, most of the main issues were decided by agreement of the two committees.

PSA10 was systematically prepared by the organizing committee (chair: M. Suzuki, co-chair: H. J. Kang), executive committee (chair: S. Hashimoto, co-chair: K. J. Kim, vice-chair: K. Yanagiuchi, vice-chair: T. G. Lee), program committee (chair: S. Tanuma, co-chair: D. W. Moon), editorial committee (chair: Y. Abe, co-chair: Y. Park), symposium secretaries (J. Lee and T. Nagatomi), auditors (J. S. Kim, Y. H. Lee, and N. Suzuki), and international advisory board (D. R. Baer, I. S. Gilmore, J. T. Grant, S. Hofmann, A. Jablonski, L. Kövér, Y. C. Ling, H. J. Mathieu, and S. Tougaard).

The Korean executive committee (co-chair: K. J. Kim, vice-chair: T. G. Lee) and secretary (J. Lee) prepared most of the symposium site, such as, the registration booth (T. G. Lee), oral presentations (J. W. Kim and Y. Yi), poster presentations (Y. H. Lee), industrial exhibition (J. C. Lee), banquet (J. W. Lee), and excursion program (J. W. Lee). The editorial committee (co-chair: Y. Park) prepared the abstract book.

The Japanese executive committee (chair: S. Hashimoto, vice-chair: K. Yanagiuchi) and

secretary (T. Nagatomi) prepared the details of the symposium, such as, the web page management, program, registration, arrangement of invited speakers, etc.

The plenary speakers were recommended by the Japanese and Korean committees to attract the attention of the participants. Initially, the most notable scientists were recommended by the members of the international advisory board, and later, other candidates were added by the Japanese and Korean committees. The invited speakers were chosen by the program committees.

### 3. Main Symposium

The symposium started at 9 a.m. on Oct. 4 with the opening remarks by the symposium chair, Prof. H. J. Kang (Fig. 1). Sixty-eight oral presentations and 116 poster presentations were presented in six topical sessions.



Fig. 1. Opening remarks by the symposium chair, Prof. H. J. Kang.

#### (1) Oct. 4 (Monday)

The plenary session, standardization and pre-standardization session, and theory and simulation session were held in a single session.

The first plenary talk was presented by Prof. R. Shimizu (International Institute for Advanced Studies) on “45 years in Monte Carlo (MC) simulation for microbeam analysis - A personal retrospective review.” He has been studied interactions of electrons and ions with solid surface using MC simulation at Osaka University before 2000 and at Osaka Institute of Technology after his retirement from Osaka University.

The application of MC simulation to the microbeam analysis was first started by himself in 1960's, in which he calculated the generation of characteristic X-ray photons under electron irradiation. He introduced studies on interaction of charged particles with solid surface using MC

simulation from a historical point of view His recent studies on secondary electron emission under electron irradiation were also introduced and its importance in industries was pointed out.



Fig. 2. Plenary talk by Prof. R. Shimizu.

The second plenary talk was presented by Dr. D. R. Baer (Pacific Northwest National Laboratory) on “Surface characterization of nanoparticles: Critical needs and significant challenges.” He pointed out the important roles of surface analysis methods for the characterization of surface and interface properties of nanoparticles.



Fig. 3. Plenary talk by Prof. D. R. Baer.

In the standardization and pre-standardization session, six speakers, including three invited speakers (C. J. Powell: NIST, I. S. Gilmore: NPL, and K. J. Kim: KRISS) presented various methods for the standardization of surface analysis by XPS, AES, and SIMS.

Four presentations, including two invited ones (S. Tougaard: University of Southern Denmark, W. S. M. Werner: Vienna University of Technology) were presented in the session of theory and simulation. In addition, nine

presentations of 10 minutes were presented by industrial experts in the vendor session.

(2) Oct. 5 (Tuesday)

The data analysis and treatment session and the novel technique and instrumentation session were held in two parallel sessions.

Seven talks including four invited ones (B. J. Tyler: Univ. of the West Indies, J. E. Castle: Univ. of Surrey, A. Jablonski: Institute of Physical Chemistry, H. Yoshikawa: National Institute for Materials Science) were presented in the data analysis and treatment session.

Eight speakers including two invited speakers (J. W. Park: Pohang Univ. of Sci. and Technol., J. Matsuo: Kyoto Univ.) presented for the novel techniques and instrumentations.

One minute presentations were presented from 13:30 to 15:30 before the poster presentation. The main purpose of the short presentations was to briefly introduce the main issues of the poster presentations. Although many presentations were stopped during the presentation because of the time limit, it was very interesting for young scientists because it gave a great opportunity to practice making an English presentation.



Fig. 4. Short poster presentation by Y. B. Park.

The number of poster presentations showed the significant progress of PSA. One hundred sixteen posters were presented in convention hall C. It was a great idea to print the ballot paper and the drink tickets on the same paper so the participants would not miss the opportunity to vote in the poster presentation area. During the poster presentation, beer and other beverages were served at a beverage bar and a box to collect the ballot papers was available to select the best poster presentation for the Powell prize award.



Fig. 5. Snap shot of poster presentation.

(3) Oct. 6 (Wednesday)

In this symposium, the practical applications of surface analysis methods were specially emphasized because it was very interesting for industries. The applications I session was about the metrology for semiconductors, metals, ceramics, composites, etc. Applications II session focused on the analysis of bio, organic, and energy materials. The two sessions were held as two parallel sessions.

Fourteen talks including four invited presentations (K. Kobayashi: National Institute for Material Science, L. P. H. Jeurgens: Max Planck Institute for Metals Research, P. Lejček: Institute of Physics and J. C Hemminger: Univ. of California) were presented in the applications I session. Thirteen talks including five invited presentations (C. M. Mahoney: NIST, T. G. Lee: KRISS, Y. Ling: National Tsing Hua Univ., D. G. Castner: Univ. of Washington, R. C. Reedy: National Renewable Energy Lab.) were presented in the applications II session.



Fig. 6. Presentation by Prof. D. G. Castner.

(4) Oct. 7 (Thursday)

Six talks including two invited presentations



(K. Yanagiuchi: TDK Corp., Z. J. Ding: Univ. of Sci. and Tech. of China) were presented in the applications I session (semiconductors, metals, ceramics, composites, etc.), the session of theory and simulation. Eight talks including three invited presentations (A. Alkafri: AIST Chubu-Center, M. Takano: Panasonic Electronic Devices Co., T. Ogiwara: National Institute for Materials Science) were presented in the Korea-Japan-China symposium, which is the extension of the Korea-Japan symposium on surface analysis. It was specially planned for the studies on pre-standardization in VAMAS TWA2. PSA10 closed after closing remarks by the chair of executive committee, S. Hashimoto.



Fig. 7. Closing remarks by Dr. S. Hashimoto.

#### 4. Industrial Exhibition

The industrial exhibition booth was held in the hall at the front of the convention hall to support the intimate collaboration between the participants and vendors. Participants could get useful information about surface analysis systems and the vendors had good opportunities to show off their newly developed systems and to explain their special points. During breaks, tea tables were set up near the center of the exhibition site to promote the discussions between the customers and vendors. Ten industries participated in the industrial exhibition.

- AMETEK / AMETEK Korea
- ASK Corporation
- IONTOF / Surface Systems Korea
- JEOL / JEOL Korea
- KRATOS / DK SCIENCE
- MILLBROOK / Tescan Korea
- Park Systems Corp.
- SPECS / DK SCIENCE
- Thermo Scientific / Surface Systems Korea
- ULVAC-PHI / Woosin Cryovac



Fig. 8. Exhibition booth during tea breaks.



Fig. 9. Welcome reception on Oct. 3.

#### 5. Social events

In PSA10, various social programs were organized for participants to enjoy the special time at interesting places and to relax.

##### (1) Welcome reception

A welcome reception is a general event in international symposia and meetings to meet and greet. The welcome reception of PSA10 started at 6 p.m. at Topaz hall near the convention hall. Many participants attended and enjoyed the standing buffet and talking about many things over cocktails.

##### (2) Symposium Banquet

The formal symposium banquet was on the evening of Oct. 5. Two hundred thirty persons participated in the banquet. Before the banquet, traditional Korean music was played on various Korean instruments. Three solos and one orchestra were played by Daegeum, Gayageum, and Danso. Participants enjoyed the beauty of old Korean folk music from the Silla Dynasty of about 1500 years ago.



Fig. 10. Photo at the symposium banquet.



Fig. 11. Powell prize award to Mr. Jongshik Jang.

The last number was a samulnori performance with four percussion instruments. It was powerful that cheered up the participants. Prof. J. W. Lee introduced the players and explained the meaning of the music.

The main event was conducted by Dr. J. Lee. A short welcome speech was addressed by Dr. D. W. Moon as the vice president of Korean Vacuum Society. Dr. D. Castner and Dr. K. Yanagiuchi delivered congratulatory addresses as the chairs of the American Vacuum Society and the Surface Analysis Society of Japan. Dr. R. Shimizu proposed a toast for a successful symposium.

### (3) Powell Prize Award

Powell prize award is an important event of the symposium banquet. It was selected by the ballot papers distributed to all participants. The Powell prize of PSA10 was awarded to poster P-18 entitled “Mechanism of interface artifacts in SIMS depth profiling of a Si/Ge multilayer by  $O_2^+$  beam” presented by Mr. Jongshik Jang. He is a doctoral student of Prof. H. J. Kang of Chungbuk Univ.. He is now studying in the SIMS lab. of Dr. K. J. Kim of KRISS. The young Korean scientist was amazed and gratified.

### (4) The Korea-Japan Committee Meeting

Korea and Japan committee meeting was held at a Korean restaurant to enhance the mutual cooperation for the future of surface analysis. It was organized by Dr. J. N. Kim of the Research Institute of Industrial Sci. and Tech. Twelve Korean members (H. J. Kang, Y. H. Lee, J. W. Lee, Y. S. Park, J. N. Kim, H. J. Kim, J. Lee, J. S. Bae, J. C. Lee, J. W. Kim, Y. Yi, and K. J. Kim) and eleven Japanese members (S. Tanuma, S. Hashimoto, M. Suzuki, K. Yanagiuchi, H. Yoshikawa, Y. Abe, T. Nagatomi, H. Tohma, H. Iwai, S. Ootomo, and M. Takano) attended.



Fig. 12. Photo at Bulguksa (English guide).

### (5) Excursion

Forty-four participants enjoyed the excursion program scheduled to visit two world heritages in the afternoon of Oct. 7 by two buses with English and Japanese guides. The first visit was to Seokguram grotto, which is National Treasure No. 24. The key point of Seokguram is an stone statue of Buddha made of granite. The second visit was to Bulguksa Temple, which is the representative relic of Gyeongju and a World Cultural Asset. Bulguksa has two famous stone towers named Dabotab and Seokgatab.

## 6. Summary

Two hundred thirty-nine regular participants from 17 countries attended in PSA10 symposium. Sixty-eight oral presentations including two plenary and 27 invited speeches and 116 poster presentations were presented. The number of participants was greatly increased from previous years and the quality of the presentations was also highly improved.

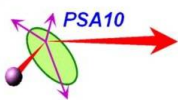




Fig. 13. Photo at Bulguksa (Japanese guide).

This great success was due to the warm collaboration between the Japanese and Korean committees. The committees were well organized and the members performed their designated roles proficiently. As the chair of the executive committee and the symposium secretary, we would like to appreciate to all committee members and the photographs taken by Dr. Changrok Choi of KRISS.

The next symposium, PSA13 is scheduled to be held in Okinawa in Japan in October of 2013. An even more successful and profitable PSA13 symposium is expected on the beautiful island.



**5th International Symposium on Practical Surface Analysis (PSA-10)**  
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Fig. 14. Symposium photo of PSA10 (October 5, in the outside garden of HyundaiHotel).