

My Impressions of the 6th Japan-China Symposium on Science and Technology of Iron and Steel

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I have the honor to have attended three Japan-China symposiums on science and technology of iron and steel. Each of the symposiums and the visits to various places after them have brought me the opportunities to learn much, meet some old friends and make new friends, promote the academic exchange and deepen our mutual understanding. The 1983's 2nd Symposium in Tokyo was the first time that I had ever been to Japan. The modernization of the city of Tokyo, the diligence and devotion of workers of all walks of life and the spiritual civilization of the people left a deep impression on me. The 4th Symposium in Kobe in 1987 was the second time that I had been to Japan. I was also struck with the artificial island completed by Kobe Steel, Ltd. through filling up the sea, which has embodied Japanese people's spirit of hard-working for the prosperity of their country.

On the basis of the increase of exchange and promotion of our friendship, I have learned more from this Symposium and the visits. Here I can only give some shallow ideas because of the limitation of my knowledge, especially in ironmaking & automation, and because I haven't had time to carefully read some of the papers.

In general, the papers presented by Japanese authors, either on fundamental research or on practical application, have attained high level.

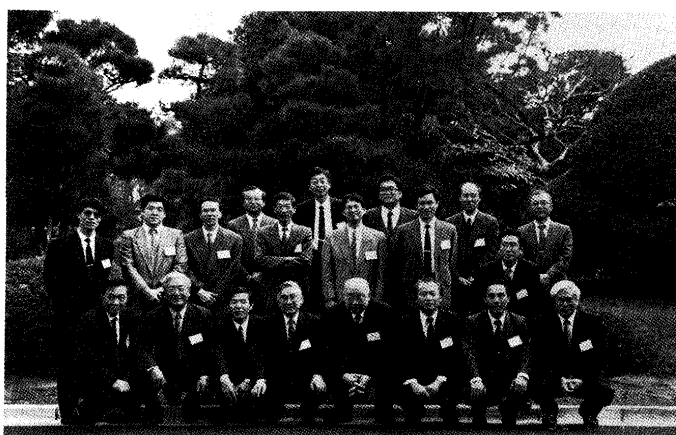


Photo.1. Ironmaking group.

Due to the wide application of alkaline earth metals in metallurgy, the accurate data on standard free energies of formation of alkaline earth oxides are badly needed. It's a pity that data reported in the literature were not accurate. Prof. N. Sano's article "Determination of Standard Gibbs Energies of Formation of Alkaline Earth Oxides" has given out the accurate data. Removal of the tramp elements such as tin and antimony informed in Prof. K. Mori et al.'s

paper is a difficult problem unsolved worldwide.

Considering that the papers presented at the session on steelmaking are related with the steel production of steel works, I am much impressed by the following :

The leaders of the Japanese iron and steel corporations, the professors and the leaders of ISIJ have the definite idea that to meet the requirements of high technology and to face the challenge in the world market of the 21st century, the corporations are continuing their advanced research and development in the fields of iron and steel, chemicals, new materials and electronics. In order to be successful in this, corporations have invested a lot of money to renew the scientific instruments and construct the new buildings for research institutes.

As is known to all, ironmaking and steelmaking always brings about environmental pollution. It is a worldwide problem to which it has become more and more urgent to find a solution. We feel strongly that Japanese metallurgists have made great efforts and progress in environmental protection.

Japanese government has invested 2/3 of its total research and development expenses of 13 billion Yen and the 8 iron and steel corporations have invested 1/3 of the money in the joint development of bath smelting reduction process. That is a clever and far-reaching step to complete such a revolutionary technology in metallurgy.

The paper "Raw Material Feeding and Its Influence on Operation Performance of Smelting Reduction Process with a Thick Layer of Slag" presented by Katayama et al. of the Japan Iron and Steel Federation and Nippon Steel Corporation has given us valuable experimental data of the smelting reduction process in a 100-ton converter.

Nippon Steel Corporation has set up a very modern Research and Engineering Center. Their motto is "Everyone should face the things of first class in the world. Challenge to the limits." The R&E Center and other research institutes are doing the research and development far ahead of the time. They are working to minimize the time of the procedure of ironmaking and steelmaking from the raw materials to products. After the short visit to the R&E Center, I do believe that their ideals are coming true and their goals will be ultimately reached.

There is not much room left in this article to allow me to list all the advanced technology and high-quality products of Nippon Steel Corporation. Here I would like to mention that I was very glad and profoundly impressed by the beautiful New Year Cards made of colorful stainless steel sheet of Nippon Steel Corporation sent by Prof. T. Fuwa and Dr. T. Ohashi.

The main idea and also the slogan of the Technical

Research Division of Kawasaki Steel Corporation is "Think & Act Creatively !" Actually, they have done as they said. The advanced technology and high-quality products such as High Clarity Sheet Steel (Laser Mirror), Extra Deep Drawable Sheet Steel, Stainless Steel Foil, Grain Oriented Silicon Steel, and other new materials impressed us very much.

Kobe Steel, Ltd. has constructed a modern Iron and Steel Research Institute in a beautiful scenery spot in Kakogawa. The idea of the construction is that the Institute not only offers modern facilities but also the most convenient and comfortable space to the researchers for their creative activities. We were greatly interested in the steel products such as heavy-forgings, shock absorbing steel plate, anti-fingerprint steel sheet, and the products made of aluminum alloy and titanium alloy. Kobe Steel, Ltd. claims that the Kobe Iron Works will be the cleanest iron works in the world. Actually it is quite clean.

Sanyo Special Steel Co., Ltd. is famous in the world for its high quality alloyed steels. Sanyo is the world's quality leader in the production of high carbon-chromium bearing steels. The special steel plants in China are making efforts to catch up with Sanyo's level in production of these steels.

The paper "Construction and Operation of Direct Current Electric Arc Furnace" presented by Mr. M. Morikawa, of Nakayama Steel Works Ltd. gives information of some new techniques such as eccentric tapping, bottom electrode, gas bottom blowing, etc. which are valuable for our reference.

From what was mentioned above, I believe that metallurgy in Japan will still maintain its leading position worldwide in the future and will still be in the lead of the world trend of technical revolution and technical innovation in metallurgy. In the past several years the Chinese iron and steel production has increased rapidly, but the quality of a considerable amount of the steels produced is poor in comparison with those of Japanese steel products, so it is still a long way to go for the Chinese metallurgists to reach the world advanced level in various respects.

The other members of the delegation and I were very much satisfied with the excellent arrangement of the Conference and the visits after it. Not only have we learned advanced Japanese technology but also the Japanese culture. We were deeply moved by the warm hospitality and meticulous arrangement by our Japanese friends.

The former president of ISIJ, Chairman of the Organizing Committee of the Symposium, the Honorable Professor of our university, Professor Zen-ichiro Morita very warmly received our Chinese delegation from the arrival till the departure in the Osaka Airport. He was very busy during that time. On November 21 (Friday) after dinner party in Tokyo, he traveled to Osaka by train to attend the morning meeting on Saturday at university; because of the traffic jam he had to travel to Osaka from Kyoto by taxi. He slept only two hours that night. After 2 days' busy work, he joined us on Sunday evening. On the day (November 27) we were leaving, he gave a lecture in the morning and had a meeting in the afternoon. He hurried to the

Osaka International Airport to see our delegation off. He had little time for rest and he did his best to join and accompany us. His erudition is well known for a long time among Chinese metallurgical scholars. My colleagues and I were deeply moved by his hospitality and kindness.



Photo.2. Sightseeing tour at Himeji Castle.

After attending a conference in USA and another in Europe with a tight schedule, advisor of Nippon Steel Corporation, Prof. T. Fuwa took the pains to accompany 85-year-old Prof. Wei Shoukun to visit Tohoku University. Prof. Fuwa always shows great affection for the Chinese friends. We respect and love him as our teacher very much.

Professors E. Ichise, M. Iwase, and Dr. H. Fujiwara, of Kyoto University very warmly received Chinese delegates. Prof. Iwase prepared welcome banners with slogans on them. He, his daughter and son prepared the national flags of Japan and China with their own hands. Manager of Technical Development Bureau of Nippon Steel Corporation, Dr. Ohashi was terribly busy in those days. He kindly served as a tour guide and introduced to us the newly constructed Research and Engineering Center.

We are also glad that our old Japanese friends, the former and present leaders of ISIJ, Mr. S. Kiyoshi, Mr. S. Tabata, Prof. Y. Matsushita, Mr. R. Nakagawa, Mr. J. Shimada, Prof. T. Fuwa, Prof. Ban-ya, Dr. T. Emi, etc. joined us at the symposium or in the party.

We greatly appreciate the great help and best care rendered us by Mr. K. Sato, and Mr. T. Ando, during the tours.

All in all, this symposium is fruitful and a great success. We really enjoyed our trip very much. Once again we are very grateful to Prof. Z. Morita, the leaders of ISIJ Mr. Shunkichi Miyoshi, and Mr. Shimada for their thoughtful arrangement and good affections for us and all those working for the Symposium.

I do believe that the Japan-China Bilateral Symposium on Science and Technology of Iron and Steel will further promote the cooperation and friendship between the metallurgists of our two countries.

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