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SCIENCE BULLETIN

National Science Council
2 Canton Street
Taipei, Taiwan, Republic of China

Austrian Technology Symposium To Open in Taipei on Nov. 15

The first Austrian technological symposium, consisting of 30 seminars, will be held at the Taipei Hilton Hotel from Nov. 15-19th, 1982. This event is sponsored by the Austrian Federal Economic Chamber, co-sponsored by Taiwan's Industrial Technology Research Institute, Euro-Asia Trade Organization and the China External Trade Development Council, and organized by the Austrian Institute for Economic Development in cooperation with the Austrian Trade Delegation, Taipei Office.

Thirty experts from different Austrian industries will come to Taipei to conduct these seminars, which will cover new technologies in the field of energy, iron and steel, mining, construction, production machinery, recycling and electronics. The seminars will be conducted in English. However, a short Chinese synopsis of the presentation will be handed out to all participants. Outstanding personalities from local industry and science have kindly agreed to act as co-chairmen of these seminars. They will introduce the Austrian speaker and lead the discussions, which thus can be conducted either in Chinese or English at the end of each seminar. Most seminars will use audiovisual equipment to illustrate technical details and application of theories.

The aim of this symposium, according to Dr. Werner Huber, Director of the Institute for Economic Development of the Austrian Federal Economic Chamber, is to build additional channels for technology transfer and exchange of ideas on the application of these technologies between scientists and engineers of both countries. Dr. Huber flew several months ago from Vienna to Taipei to personally direct all the preparations for this event.

Responses to the first invitations have been overwhelming. Already more than 4,000 acceptances have

been registered at the Austrian Trade Delegation, Taipei Office. Due to this tremendous interest, especially in the seminars dealing with construction and plastic technologies, certain seminars will have to be divided into two sessions and will be repeated later that day. A certificate of attendance, issued by the Austrian Federal Economic Chamber, will be mailed to all participants upon filling out their attendance cards.

In addition to this first Austrian technological symposium, the Austrian Trade Delegation and Taipei Hilton Hotel will sponsor an authentic Austrian culinary festival, presenting Austrian food specialties in the weeks from Nov. 14-30. A well-known Austrian zither player will be especially flown to Taipei for this event. In view of these major activities, November could certainly be termed "The month of Austria in Taipei."

Premier Sun Outlines Major Gov't Tasks for Scientific & Technological Development

Premier Sun Yuan-suan listed three urgent tasks for his administration at his Oral Administrative Report to the First Meeting of the 70th Session of the Legislative Yuan on September 21. The tasks he identified are:

1. Revision of the "plan for scientific and technological development." The Executive Yuan held the second national conference on science and technology in February of this year. Immediately after that, we revised the original science and technology development plan in accordance with the conference conclusions and suggestions. The revised plan has been approved by the Executive Yuan and referred to the related ministries and departments for implementation. The new plan will accelerate cultivation and recruitment of technological personnel, improve the technology and science environment, stress the importance of studying basic science and strengthen development of integrative science. It also will emphasize the study of energy resources, materials science, the information industry, automation, heredity engineering, food processing, hepatitis B and laser. The government will provide assistance.

2. Development of the Hsinchu Science-Based Industrial Park. A total of 37 companies have been approved for factory investments in the park. Twenty-five have begun production. Some of the products are in the high-tech category and will be helpful in upgrading national industry.

3. Augmenting the recruitment of overseas Chinese scholars and experts for service at home. To strengthen scientific and technological development and escalate standards, the National Science Council and National Youth Commission recently have placed greater emphasis on the recruitment of overseas Chinese scholars and experts to work on various development projects in the Republic of China. In July and August of this year, the Academia Sinica Congress, National Development Seminar and Seminar on Modern Engineering Technologies were held in Taipei. Scholars from at home and abroad gathered together to exchange ideas and express constructive opinion on the acceleration of national scientific and technological development. The meetings were highly successful.

Production of Silicon from Domestic Quartz(ite)

Summary Report on First Year Progress

July 1981 – Aug. 1982

Lung Tsuen-Ni

Mining Research and Service Organization
Industrial Technology Research Institute

In 1981, the National Science Council formulated an integration program to develop technological ability of producing silicon material for future solar-cell and semiconductor manufacturing. To meet this objective a general survey of the high-purity siliceous raw materials in Taiwan and using it to produce metallurgical-grade silicon in laboratory were first planned and carried out as part of the project. The present report is the results obtained from field investigation and laboratorial study for the specific purpose of metallic silicon production.

Vein quartz, quartzite, metamorphosed chert and sandstone are four major types of silica deposits economically feasible for silicon production or for other industrial utilization. The sandstone in the Nanchuang Formation, exposed mainly on northern Taiwan, supplies more than 90% of the silica sand consumed annually by domestic glass and ceramic manufacturers. Since the sandstone is relatively of low quality and poor reactivity for production of metallic silicon, this type of deposit is not discussed in the report.

Quartz veins are scattered in many places on the eastern slope of the Central Mountain Range, but only a limited amount is considered economical minable. Eight vein quartz deposits occur in eastern Taiwan and were investigated under this project. The total proved reserve is nearly 42,000 tons with an average silica content of more than 98%. Among them, the Wanyung deposit in Hualien is particularly important in assessing its purity of quartz, tonnage of reserve, and accessibility. The quartz veins in Shuishetashan, Nantou-hsien have a total proved reserve of 20,000 tons with an average grade better than 98.5% SiO_2 .

The whitish, relatively pure quartzite of the Szeleng Formation is exposed largely in the Hsuehshan Range in central Taiwan along the Central Cross-island Highway and extends southward to the Puli basin. The economically indicated reserves from superficial occurrence are found at Kukuan in Taichung-hsien and at Kuo-hsing in Nantou-hsien. The rock is

medium- to coarse-grained quartzite or quartzitic sandstone with an average silica content of 90-94%. The metamorphosed chert is distributed widely in the Tananao Schist in the north-eastern part of Taiwan. The major outcrops were found mainly along the eastern section of the Central Cross-island Highway from Tze-an to Tien-hsiang. The chemical analyses of the rock samples taken from the outcrops show an average silica content of 92-95%. The high-silica content quartzite and metamorphosed chert are basically not as good as the vein quartz for production of metallic silicon, but can be used to manufacture ferro-silicon.

The first in-house designed 25 kg

batch-type 35 kVA single electrode submerged arc furnace for studies of producing metallic silicon from vein quartz was completed in early 1982. Test-run smeltings with vein quartz taken from eastern Taiwan with petroleum coke as reductant were carried out in the furnace. The reduced silicon collected from first stage studies were analysed to show an average of better than 98% silicon content.

The new enlarged and redesigned 100 kg batch-type 35 kVA single electrode submerged arc furnace was completed its construction at the summer of 1982. Test-run smelting is going on for furnace operation and function studies.

Post-APRCB Symposium On Clinical Biochemistry Held

A Post-Asian Pacific Regional Clinic Biochemical Association Symposium on Recent Advances in Clinical Biochemistry was held in Taipei last month under the joint auspices of the National Science Council and the National Taiwan University Medical College. Five Chinese experts and 12 foreign scientists from Hongkong, Japan, Korea, France, Sweden, the United States and West Germany attended the symposium, which lasted from Sept. 26 through 28.

Dr. Alvin Dubin delivered a plenary lecture on the opening day on the topic of "Diagnostic and Therapeutic Significance of Serum Amino Acids in Liver Disease". The ensuing discussion covered the following subjects:

New Approach for the Assay of Biochemical Components
by Enzymatic Reactions,

Urinary Catecholamine Determined by Reverse-phase,

High Performance Liquid Chromatography,

Application of Solid Phase Technology in Clinical Chemistry Developed in Japan,

The Mode of Action of Angiotensin-converting Enzyme:

The Nature of Chloride Ion as a Non-essential Activator,

Recent Advances in Clinical Chemistry—The Use of Monoclonal Antibodies,

Insulin Receptor on Human Leukemia and Lymphoma,

Detection of Two Viral Type Reverse Transcriptase Activities in Both Human Milk and Human Breast Carcinoma,

Recent Developments in Monitoring Neonatal Jaundice,

Serum Bilirubin and Its Binding Parameters in Chinese Neonates,

Performance Monitoring in Immunoassays,

Clinical Applications of FPLC,

New Development in Specific IgE Antibody Measurement,

The DNA Polymerase Reaction of Hepatitis B Virus, and

Phosphonoformic Acid-inhibitable Nucleotide Incorporation as a Measure of Dane Particle DNA Polymerase Activity.

NSC-Supported Research Projects

Natural Sciences and Mathematics

Yuan-vern Lee

NSC71-0204-M007-13

Chemiluminescence of small molecules and products identification of some atmospheric reactions using matrix isolation technique

Tse-ming Lin

NSC71-0202-M072-01

An investigative research of low visibility over Taiwan - Second part - The objective analysis on low visibility over Taiwan

Chen Cheng-hong

NSC71-0202-M002-02

Petrological study of beogene alkali rocks in northern Taiwan (I)

Kong-ying Lin

NSC71-0202-M071-02

On the distribution of heavy rainfall in Taiwan

Vei-chow Juan

NSC71-0202-M002-04

Petrology and mineral chemistry of andesitic agglomerates in Tuluanshan formation of the coastal range, eastern Taiwan

Y. S. Wu

NSC71-0202-M008-02

Geophysical and geologic study on the Tatun Volcano Group - Yangming Shan area

Koung-ying Liu

NSC71-0202-M072-03

An analysis and study of the strong wind over northern Taiwan

Y. H. Yeh

NSC71-0202-M001-01

Subsurface structures of Taiwan by invesion of gravity data (II) Southern Taiwan

Yi-ben Tsai

NSC71-0202-M001-04

Earthquake prediction research in Taiwan

Wen-jeny Liang

NSC71-0202-M001-05

Application of model output statistics on air pollution accessment

Humanities and Social Sciences

Chang-ju Shih

NSC71-0301-H001-03

An archaeological survey of the upper valley of Choshui River

Ying-chang Chuang

NSC71-0301-H001-05

Familial networks, attitude and reproductive patterns: Chi-lou case study

Jia-dong Shea

NSC71-0301-H001-06

Official interest rate, market interest rate and price in Taiwan

C. Y. Wang

NSC71-0301-H002-05

Perceptions of and adjustments to soil erosion and slope instability in the community development of Keelung

Hwang Chien-how

NSC71-0301-H003-03

A study on the physical and psychological development of Chinese gifted children

In-mao Liu

NSC71-0301-H002-03

Processes of acquiring new knowledge and answering questions

Hsien Rin

NSC71-0301-H002-04

Preservation and classification of previous psychiatric records and statistics on hospital psychiatric patients at NTUH

Chueh Chang

NSC71-0301-H002-01

A feasibility study in developing university campus mental health program

Edward Tang

NSC71-0301-H005-01

A study of social indicators and national modernization: Comparison of the degree of modernization between ROC & other newly industrialized nations

F. C. Chang

NSC71-0301-H110-01

Teaching English composition to senior high school students

Ts'ui-jung Liu

NSC71-0301-H001-04

Analyses on the land records of Kwang-tung in the 1930's

Koji Okogochi

NSC71-0301-H002-06

Optimal policy for renewable resources for a small open economy - with special reference to Taiwan

Vincent Sze

NSC71-0301-H004-02

An analytical study of insurance cases from 1975-1981

Han-kuang Mao

NSC71-0301-H001-01

Studies and commentaries of epitaphs of T'ang dynasty

Ching-hsi Chang

NSC71-0301-H002-02

The mechanism of education in the process of economic development

Joseph Wong

NSC71-0301-H030-01

A study of migration in Hsinchuang

Yung-hua King

NSC71-0301-H034-01

An annotated catalogue of archaeological objects excavated by aurel stein at Turfan in 1915

Jia-you Sheu

NSC71-0301-H001-02

Social stratification and labor markets: An empirical study of the textile industry and the electronic industry

Cheng-hung Liao

NSC71-0301-H002-07

Historical and social analysis of agricultural development in Taiwan 1945-1980

Chao-ming Cheng

NSC71-0301-H002-08

Perception of Chinese characters and words

Han-wen Yen

NSC71-0301-H003-01

Sex knowledge, attitude and professional sexual role behavior of selected nurses and family planning workers

Peter Vuan-kai Wang

NSC71-0301-H003-02

A study of physical fitness levels of mentally retarded individuals in Taiwan, the Republic of China

Biological, Agricultural, and Medical Sciences

Chun-te Chang

NSC71-0409-B005-18

Studies on the relation between site environment and productivity of cryptomeria plantation in Taiwan

Wen-hsui Hsieh

NSC71-0409-B005-09

Biological studies of rust fungi on economic crops in Taiwan

Chiang Kao
NSC71-0409-B006-01
An economic analysis of the optimal thinning and rotation for cryptomeria

I-lang Yang
NSC71-0409-B055-02
Use of periwinkle as an indicator to clarify the distinctions among several plant witches' broom diseases in Taiwan

Jen-hsou Lin
NSC71-0409-B002-33
An improved method of isolated mammalian adrenal cells as a practical bioassay for plasma ACTH determination

Chi-fa Chow
NSC71-0409-B029-01
Studies on using pork skin collagen to manufacture gelatin

Pei-yuang Chi
NSC71-0409-B002-34
The effect of ACTH and corticosterone on LH release from adenohypophysis *in vitro*

T. F. Sheen
NSC71-0409-B055a-02
Breeding on virus resistance (or tolerance) of radish, IV. Resistant (or tolerant) selection in F₃

Yau-i Chu
NSC71-0409-B002-35
Studies on the overwintering of brown planthopper with its egg stage

Kuang-yang Lue
NSC71-0409-B003-01
The ecological study on Chu-wei mangrove swamp (II)

Jyh-chao Hsue
NSC71-0409-B005-20
Studies on the micropropagation of avocado

Shu-ying Tang
NSC71-0412-B002-62
Studies on the experimental polychlorinated biphenyls poisoning in rats, I. Effects of dietary fat and fibers

Shiau-yen Chiu
NSC71-0412-B002-63
Effects of antibacterial specific sera and nucleic acids of animal cells on the synchronization of bacteria

Kue-hsiung Hsieh
NSC71-0412-B002-64
Generation of allergen-specific suppressor cells and its characteristics after specific hyposensitization

Teh-cheng Jou
NSC71-0412-B110-28

Studies of normal and neoplastic neuroglia derived from Chinese and rat brains *in vitro*

Ching-liang Shen
NSC71-0412-B010-29
Sprouting of the retinal projections in the optic system of the albino rat

Ellen F. Liu
NSC71-0412-B010-30
An investigation of medical core collections and their possible uses and influences to the health institutions in Taiwan

Ling-pai Ting
NSC71-0412-B010-31
The study of thermotolerance and heat shock proteins in normal and tumor cultured cells

John Bin Cheng
NSC71-0412-B010-32
Muscarinic cholinergic receptors and asthma

Shu-chen G. Chen
NSC71-0412-B010-33
Studies on the mechanism of aflatoxical inhibition of rat liver RNA synthesis

Yau-huei Wei
NSC71-0412-B010-34
Inhibitory effect of mycotoxins on mitochondrial electron transport chain

P. H. Chen
NSC71-0412-B010-35
Levels of polychlorinated quaterphenyls and polychlorinated biphenyls in the blood of PCB-poisoned patients and their relations to the clinical manifestations of the patients

Chao-mei Ho
NSC71-0412-B010-36
Study of tropical pulmonary eosinophilia in albino rat caused by *Brugia pahongi*

Hsin-kan Wu
NSC71-0409-B001-02
Improvement of blast resistance in successful rice cultivars (III)

Neen Lee
NSC71-0409-B002-24
Effect of bulb size and planting density on growth and daughterbulb production of *Pleione formosana* Hayata

Tzue-tar Fang
NSC71-0409-B002-26
Studies on the spore bearing lactic acid bacteria for production of salted and fermented vegetables

Donald R. Progulske
NSC71-0409-B002-28
Feeding habits of flying squirrels

M. N. Chiang
NSC71-0409-B002-29
Studies on photorespiration in horticultural crops

King-tsuen Wu
NSC71-0409-B005-16
Study on the surface activated bonding system—Chemical behavior of wood polysaccharides treated with nitric acid and heat

Zen-hong Shu
NSC71-0409-B055a-01
Studies on the lateral floral bud formation in mango

I-chiu Liao
NSC71-0409-B056a-01
Study on properties and preliminary cryopreservation of several fishes

Ming-chin Liu
NSC71-0409-B058a-01
Selection of NaCl tolerant sugarcane cell lines and plants by using suspension culture technique

C. C. Huang
NSC71-0409-B002-31
The seasonal change of reproductive glands in red bellied squirrels

Shean-ya Yeh
NSC71-0409-B002-32
On the standardization of the fishing effort in the Taiwan trawl fishery in the Australian waters

S. P. Yang
NSC71-0412-B002-41
A 5-year follow study of a successfully separated ischiopagus trious conjoined twins, Chang Chung-jen and Chang Chung-yi

C. F. Chen
NSC71-0412-B002-42
Renal function change of rate after injection of grass carp bile

Huei-chen Huang
NSC71-0412-B002-43
Studies on the pharmacological actions of toxins from *Vipera russellii* venom

Yu-tzu Dai
NSC71-0412-B002-44
An alternative method of bowel preparation for large bowel surgery

Hung-chi Lue
NSC71-0412-B002-45
Immunological study of rheumatic fever — especially the regulatory T-lymphocyte function