

1991 MRS-Korea Conference and Aeronautics-Space Materials Exhibition Held in Seoul

The first MRS-Korea Conference and Aeronautics-Space Materials Exhibition, sponsored by the Materials Research Society of Korea, was held at the Olympic Youth Hostel, Seoul, Korea, on November 15-16, 1991. The conference was designed as a forum to exchange information on research and development progress and research interests on materials science and engineering, with a special emphasis on aeronautics-space materials.

More than 100 papers were presented in the areas of electronic and magnetic materials, composites, sensors, alloys, surface characterization as well as aeronautics-space materials. In addition, about 30 private companies participated in the materials exhibitions, which overwhelmingly attracted public attention. The exhibit was held simultaneously with symposia for the first time in Korea, and it complemented the technical program very well.

In addition to the regular paper presentations, the following invited talks were given:

"Materials Research under High Pressure," Toshimi Yamane, Department of Materials Science and Engineering, Osaka University, Japan.

"Korean Aeronautics-Space Industries

and Technological Development," Jae Hak Hong, President of Korean Aeronautics-Space Research Institute.

"Present and Future of Korean Aeronautic Materials Industries," Hak Min Kim, Korea Institute of Machinery and Metals.

"The Bonding of Aircraft Materials," Yoshikuni Nakao, Production and Processing Engineering Department, Osaka University, Japan.

"MOCVD in Semiconductor and Superconductor Technology," Fedor A. Kuznetsov, Director of Institute of Inorganic Chemistry, Academy of Science of the U.S.S.R.

"Recent Trends of R&D in Steel Long Products," Fukukazu Nakasato, Chief Manager, Kokura Steel Works, Sumitomo Metal Industries, LTD, Japan.

Other News from MRS-Korea

■ Last August, the executive council of MRS-Korea approved Chon's recommendation to have the following distinguished scientists as honorary members of MRS-Korea: R.P.H. Chang, president of IUMRS, Northwestern University, U.S.A.; and Shigeyuki Sōmiya, president of MRS-Japan, Nishi Tokyo University, Japan.

■ MRS-Korea is publishing the *Korean Journal of Materials Research* bi-monthly.

■ The 1992 Spring MRS-Korea Conference will be held in Taejon in May 1992.

For more information about MRS-Korea, contact: MRS-Korea Office, Seongdong P.O. Box 4, Seoul 133-600, Korea; phone 82-2-297-6771; fax 82-2-291-0578.

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E-MRS Holds Summer School on Laser Ablation of Electronic Materials

Because laser ablation etching and deposition of solids for microelectronics has received much attention in recent years, it seemed important, for both scientific and technological reasons, to bring together leading scientists from universities, national laboratories, and industries to determine the status of ablation of solids including dielectrics, metals, semiconductors, superconductors, and polymers and to discuss future opportunities of this process for materials science and technology.

The E-MRS Summer School on Laser Ablation of Electronic Materials, co-chaired by E. Fogarassy (CNRS-Strasbourg, France) and S. Lazare (University of Bordeaux, France) was held September 16-19, 1991 at Carcans Maubuisson (Gironde) in France under the auspices of the European Materials Research Society, and was sponsored by the European Networks and IBM-France. More than 90 participants attended, including scientists and engineers

from Japan, the United States, and 10 European countries including Russia, providing a large and detailed overview of fundamentals and applications of laser ablation processing.

The four-day program consisted mainly of 20 invited review lectures and 12 late-news communications. All participants were free to present their work during the poster sessions to exchange information and interact directly with expert scientists.

A special exhibition allowed industry representatives to display equipment, such as laser sources (Lambda-Physik, Sopra), laser ablation and processing systems (ISA-Riber, Exitech Ltd, Varian), and instrumentation (Perkin-Elmer).

The scientific program was divided into three main parts: basic mechanisms of ablation; diagnostics used in determining mechanisms; and applications in new materials synthesis, surface patterning, and instrumentation. J.F. Eloy (CEA-CESTA,

France) led off the program with a historical overview of laser ablation during the last 20 years.

Basic Mechanisms

General aspects of laser solid interactions, particularly with respect to laser ablation, were discussed in detail by D. Bauerle (Linz University, Austria). Invited contributions dealt with the basic mechanisms of laser ablation of various solids, such as metals (M. von Allmen (consultant, Switzerland) and polymers (R. Srinivasan (UVTech Associates, U.S.A.) and M. Stuke (Max-Planck-Institut, Germany) and comparisons of the processes in relation to the materials' target properties. In this area, R.W. Dreyfus (IBM-Watson, U.S.A.) reviewed theoretical and experimental aspects of the ablation of metals and dielectrics. J. Brannon (IBM-Almaden, U.S.A.) focused on copper and polymer photoablation.

Finally, G. Petite (CEA, France) gave a very instructive presentation on electron emission associated with laser solid interactions both in metals and dielectrics.

Diagnostics

The physical mechanisms of ablation remain controversial but are expected to largely depend both on the physico-chemical properties of the target and laser irradiation conditions. This is why it appears of paramount importance to analyze the plasma formation and species emission from laser treated targets using *in-situ* time- and space-resolved techniques.

Laser ablation of high T_c superconductor and semiconductor targets under vacuum and gaseous conditions was investigated by P.E. Dyer (University of Hull, U.K.), K. Murakami (University of Tsukuba, Japan), and A. Catherinot (University of Limoges, France) using optical spectroscopy and/or fast imaging techniques.

D.B. Geohegan (Oak Ridge National Laboratory, U.S.A.) extensively studied

laser-produced plasma from YBaCuO targets by a combined set of *in-situ* diagnostics such as ion probes, optical emission and absorption spectroscopy and ICCD photography.

Applications

As clearly depicted by H.U. Habermeier (Max-Planck-Institut, Germany) and J. Perriere (University of Paris 6-7, France) for YBaCuO and BiSrCaCuO, respectively, laser ablation is able to produce high quality films of the new superconductor compounds, meeting industrial requirements.

These successful results explain the recent growing interest in depositing and synthesizing thin films of new materials with this novel technique. J.T. Cheung (Rockwell I.S.C., U.S.A.) also emphasized the technique for growing epitaxial layers of CdTe, HgCdTe, and their superlattices as did D.H. Lowndes (Oak Ridge National Laboratory, U.S.A.) for fabricating epitaxial copper oxide semiconductor/superconductor heterostructures.

Another important area is laser surface patterning of electronic materials. Laser surface modification and ablation of polymers, important in microelectronics, was reviewed by A. Yabe (NCL, Tsukuba, Japan).

An interesting comparison between laser ablation and laser etching of silicon in a chlorine atmosphere was presented by J. Boulmer (IEF Orsay, France). Finally, in instrumentation, J.F. Muller (University of Metz, France) demonstrated that laser ablation coupled with a mass spectrometer could be an alternative tool for surface characterization and material analysis.

A proceedings including invited and contributed papers is under preparation and will be published by Elsevier/North Holland.

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UPCOMING CONFERENCES

1992 P/M Congress to Feature Powder Metallurgy, Particulate Materials

The 1992 Powder Metallurgy World Congress, June 21-26, San Francisco, California, will air its largest technical program yet on powder metallurgy and particulate ma-

terials. Sponsored by the Metal Powder Industries Federation and the American Powder Metallurgy Institute, the congress will feature more than 400 presentations in technical sessions, seminars, specialty symposiums on emerging technologies, and poster sessions. More than 2,500 delegates are expected from 40 countries. The

Congress is held once every four years in North America.

Program topics cover metal powder production techniques and properties, powder consolidation and production techniques, specialty materials, and new applications of the technology.

Some specific subjects to be covered include high-temperature and liquid-phase sintering, powder injection molding, thermal spraying, wear-resistant materials, nanoscale materials, hybrid packaging and other electronic materials, intermetallics, metal matrix composites, rapid solidification technology, superconductors and lightweight alloys.

Special programs will review powder injection molding, the automotive and P/M industries, emerging P/M composites, mechanical alloying, and super plastic forming of P/M parts.

In addition to the technical program, the conference will include a trade exhibition featuring materials, equipment, and products from international suppliers.

The metal powder field is growing in Western and Eastern Europe and in the Pacific Rim nations. Annual worldwide metal powder shipments exceed 800,000 tons.

For further information and a copy of the technical program, contact: Metal Powder Industries Federation, 105 College Road East, Princeton, New Jersey 08512; phone (609) 452-7700; fax (609) 987-8523. □

Announcement

Second Conference on Computational Research on Materials

April 12, 13, and 14, 1992
Lakeview Resort and Conference Center
Morgantown, West Virginia

Join leading material researchers from universities, industry, and national laboratories in assessing the aims and latest developments in the computational materials research agenda:

- the national materials research agenda and materials modeling
- industrial applications of computational materials modeling
- atomistic and continuum modeling for the design of both structural and functional materials systems
- the role of highly parallel computing for specific problems
- linking experimental verification to atomistic and continuum modeling

For more information, contact:

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