

In The News

Conference and Meeting News

Conferences held July 1997 - October 1997

ICPIG XXIII

The 23rd International Conference on Phenomena in Ionized Gases (ICPIG XXIII) took place in Toulouse, France, July 17-22, 1997.

Chaired by Pr. A. Bouchoule, of the University of Orléans, France, the conference was attended by about 560 participants representing more than 50 countries and consisted of 32 invited lectures on selected topics and associated poster sessions divided into 19 topics.

The purpose of the Conference was to cover a panel as large as possible of plasma technologies, and both fundamental and theoretical issues, as well as experimental research, were presented. State-of-the-art studies on gas discharges and diagnostic techniques were also highlighted. Industrial applications such as biomedical, spatial, and lasers were not forgotten. Subjects included kinetics, thermodynamic and transport phenomena, elementary processes, low pressure glows, coronas, sparks, surface discharges, high pressure glows, arcs, high frequency discharges, ionospheric, magnetospheric and astrophysical plasmas, plasma diagnostic methods, plasma wall interactions, electrode and surface effects, physical aspects of plasma chemistry, plasma processing of surfaces and thin film technology, generation and dynamics of plasma flows, non-ideal plasmas, clusters and dusty plasmas, waves and instabilities, shock waves, non-linear phenomena and self-organizing processes, particle and laser beam interactions with plasmas, plasma sources of radiation, numerical modeling in plasma and discharges, plasmas for environmental issues, highly ionized, low pressure plasmas, and high pressure non-thermal plasmas.

Some papers and conferences were more particularly relevant to thermal plasmas:

Conferences

- W.G. Graham (Dept. of Pure and Applied Physics, The Queen's University of Belfast, Ireland): *Time Resolved Spectroscopy of R.F. Plasmas*
- P. Favia (Dept. of Chemistry, Centro di Studio per la Chimica dei Plasmi, University of Bari, Italy): *Grafting of Chemical Groups onto Polymers by Means of R.F. Plasma Treatments: A Technology for Biomedical Applications*
- P. Fauchais (LMCTS, Equipe PLM, Université de Limoges, France): *Transient Phenomena in Plasma Torches and for Plasma Sprayed Generation*
- B. Jüttner (Max Planck Inst. For Plasma Physics, Berlin, Germany): *Properties of Arc Cathode Spots*

- C.H. Kruger (Stanford University, California, USA): *Diagnostics of Non-Equilibrium Thermal Plasmas, with Applications to Diamond Synthesis*
- J.J. Lowke (CSIRO, Division of Applied Physics, Lindfield Sydney, Australia): *A Unified Theory of Arcs and Their Electrodes*

Papers

- P. André et al. (LAEPT, Aubière, France): *Concentration and Transport Coefficients in Plasma out of Thermal Equilibrium*
- J.M. Bauchire et al. (CPAT Toulouse, France): *Metallic Powders in a Plasma Torch: Numerical Modeling of the Current Intensity Effect*
- M. Bouaziz et al. (CPAT Toulouse, France): *Departures from Equilibrium in the Anode Region of a Transferred Arc at Atmospheric Pressure*
- M. Capitelli et al. (Univ. of Bari, Italy): *Revisited Collision Integrals and Transport Coefficients of High Temperature Air Components*
- B. Dussoubs et al. (LMCTS Limoges, France): *Computational Analysis of a Three-Dimensional Plasma Spray Jet*
- G. Faure et al. (LAEPT, Aubière, France): *Spectroscopic Temperatures Measurements in an Ar-CO₂-N₂ Plasma*
- Gleizes et al. (CPAT Toulouse, France): *Calculation of Mean Absorption Coefficients for Thermal Plasmas*
- N.K. Mitrofanov et al. (Ioffe Phys. - Tech. Institute, St. Petersburg, Russia): *Experimental Study of Cathode Region of Pulse High Current Free Burning Arc...*
- J. Pacheco et al. (ININ, Toluca, Mexico): *DC Plasma Torch Theoretical and Experimental Results*
- B. Pokrzywka et al. (Institute of Physics, Cracow, Poland): *Phenomena in the Electric Arc Cathode Region*
- N. Singh et al. (CPAT Toulouse, France): *Experimental Measurements on a DC Plasma Torch: Comparison with Theoretical Model*

During the conference, the scientific program included a workshop that dealt with some present applications of plasma technologies, from display panels and processing of semiconductors to electromagnetic propulsion and industrial waste treatment.

The Penning Award, sponsored by Philips Lightning, was presented to Pr. S. Takeda of Japan, for his long-standing contributions in the field of gas discharges during the past 40 years.

Proceedings of the Conference were printed at the Université Paul Sabatier de Toulouse, with M.C. Bordage and A. Gleizes serving as editors. For a copy, please contact M.C. Bordage, CPAT, Université Paul Sabatier, 118, Route de Narbonne, 31062 Toulouse Cedex 4, France. The text of the invited talks will be published in a special issue of the *Journal de Physique*, in early 1998.

The 24th ICPIG will be held in Warsaw, Poland, in July 1999. Pr. Rukhadze, of the Russian Academy of Sciences, will serve as Chairman.

B. Dussoubs
LMCTS, University of Limoges, France

13th International Symposium on Plasma Chemistry

The 13th International Symposium on Plasma Chemistry was held from August 18-22, 1997 in Beijing, China. This symposium attracted well over 300 delegates. Seventy (23%) were from the European Union, 27 (9%) were from Europe and Eastern Europe, 170 (54%) were from Southeast Asia, 43 (14%) were from America, Australia and Africa. The scientific program was dense and interesting, with 376 conferences (7 plenary lectures, 19 invited papers, 328 contributed papers in 154 parallel oral sessions, and 174 poster sessions). As such a wide range of information was presented, it is very difficult to give a complete synthesis of all the presentations, with the three to four parallel oral sessions making it even more difficult. The last day of the conference was focused on industrial applications, with 22 oral conferences.

With its extensive scope of papers in fundamental and applied researches, the symposium incited the development of interactivity between laboratories and industry.

The different topics programmed in the following sessions were:

Topic	Conferences
• Basic processes in plasmas	18
• Sources, diagnostic and modeling of thermal plasmas	61
• Sources, diagnostic and modeling of low pressure plasmas	48
• High pressure – non-equilibrium plasmas	27
• Plasma-surface interactions etching	26
• Plasma-particle interactions	14
• Plasma-aided deposition	37
• Polymerization, surface modification and organic films	29
• Plasma spraying	24
• Metallurgy, chemical synthesis, and ultrafine powders	40
• Plasma research for the environment	23
• Industrial applications of plasma chemistry (thermal and non-equilibrium plasmas)	27

The symposium was preceded by a summer school on plasma chemistry in which internationally known experts gave lectures to 20-30 participants, in both thermal and non-equilibrium plasmas.

Finally, ISPC 13 was held at the Beijing Hotel, located in the historic center of Beijing City, close to Tiananmen Square and the Forbidden City. A break in the middle of the week gave all the participants the opportunity to make an excursion by bus to the famous Great Wall and the Ming Tombs.

Everybody appreciated the organization of both scientific and social events and warm thanks are due to Symposium organizer Prof. C.K. Wu and his team for their work.

Five books of proceedings were published; interested persons should contact Prof. C.K. Wu, Institute of Mechanics, Chinese Academy of Sciences, Beijing 100080, China, fax number (8610) 6255-9588.

Prof. D. Morvan
ENSCP, University of Paris 6, France

United Thermal Spray Conference and Exposition

The first United Thermal Spray Conference (UTSC '97) and Exposition (replacing the National Thermal Spray Conferences) was held at the Indiana Convention Center in Indianapolis, IN, September 15-18, 1997.

UTSC '97 marks the beginning of a new era of international conferences in the field of thermal spraying. The Thermal Spray Society (TSS) of ASM International, former sponsor of the National Thermal Spray Conference series in the United States, and the German Welding Society (DVS), former sponsor of Thermal Spray Conference series in Germany, have joined forces to organize this new series of international conferences. This global cooperation will attract speakers, exhibitors and attendees from around the world, resulting in a conference and exposition that will highlight the latest research and commercial developments in the field of thermal spraying. UTSC '97 will be regarded as the premiere thermal spray event held anywhere in the world within the next 18 months.

The technical programs at UTSC '97 have been strengthened by a plethora of high quality papers from around the world. The conference featured a plenary session in which representatives from key thermal spray industries discussed their current activities and future needs. It was preceded by a keynote speaker from academia on cutting edge materials development. More than 200 technical papers were presented by leading experts from around the world. Technical sessions were organized into symposia covering structure-property relationships, thermal barrier coatings, residual stress, HVOF, infrastructure, aerospace/transportation/power generation, and product development. A large number of presentations have been focused on process characterization (modeling and diagnostics).

Special symposia were organized in:

- Research in progress – leading academic researchers from the United States, Finland, France, Germany, Canada, Japan, Singapore, and the United Kingdom presented the research and development work of their institutions
- The structure of the research organization
- How the university or institute interfaces with government, industry and other organizations
- The nature of the undergraduate and graduate education, especially in the area of thermal spray
- Specialist research and development interests
- Perceptions of future “grand challenges” for thermal spray

The sharing of such information or the communication of mechanisms or interaction has enabled the description and specification of “the future research topics for

thermal spray," covering applications, materials development, equipment, diagnostics, NDE, testing, etc.

Commercial developments were presented, as suppliers discussed the newest products they are introducing, and thermal spray support and service was also focused on, with leading experts discussing the critical aspects of shop performance, such as process efficiency.

More than 50 exhibitors highlighted their products and services at UTSC '97. In addition to the latest in thermal spray equipment and consumables, exhibitors included a wide range of service organizations which supply coatings, and companies which supply other products and processes used by the thermal spray industry. As an added bonus, attendees were able to visit the ASM/TMS Materials Exposition and the ASM Heat Treating Society Exposition.

Persons interested in obtaining a copy of the proceedings should contact ASM International, Materials Park, OH 44073-0002, fax number (216) 338-4634.

Prof. A. Vardelle
LMCTS, University of Limoges, France

Conferences scheduled for 1998

International Thermal Spray Conference

Held every three years, the International Thermal Spray Conference (ITSC) and the associated exhibition has become the leading forum for the thermal spray community worldwide. The forthcoming 15th ITSC, which will take place in the Palais des Congrès in Nice, France, May 25-29, 1998, will be a unique international event on thermal spray for the coming year.

More than 370 abstracts have been received, representing many different countries. They cover theoretical aspects such as modeling and properties of coatings linked to spraying parameters, the different spraying processes, process and quality control with an emphasis on online control, and the practical aspects of different coating applications. This kind of balance between the various aspects of thermal spraying is the key to a great conference. Awards will be granted to the best papers and posters. Twelve keynote speakers will highlight the knowledge and state-of-the-art in the different topics, and provide an excellent introduction to the different sessions, which are well suited to newcomers as well as to old-timers in the field.

A large exhibit will reflect the latest in thermal spray equipment, powders and other consumables. A variety of service organizations and companies supplying coatings and/or other equipment related to the thermal spray industry will also take part in the exhibit. Metallographic equipment and services for characterization will also be on display. All major companies in the field, as well as many small companies, have already booked their booths.

An industrial forum on thermal spraying will gather professionals and end users (or potential ones). Its objective is to promote thermal spraying in France and Europe and to bring together thermal spray equipment/service firms and potential users.

Debates, discussions and roundtables chaired by specialists will be oriented towards innovative and high growth potential applications. They will allow the presentation, for the first time, of the state-of-the-art of the techniques and the market in the surface treatment field.

Moreover, specific opportunities for individual exchanges will be programmed, thus providing numerous sales contacts, especially for medium-sized and small European firms. A two-day advanced course, to be held before the conference, will review the processing science of the different thermal spray coating processes, introducing the theory of operation. The theory and practice of the coatings will be presented, including coating application, characterization, testing and case studies.

ITSC 98 will give its attendees plenty of opportunities to learn about the latest in research, development, applications and equipment, while expanding their personal network for problem solving and career building. Participants will find many good reasons for attending ITSC 98, and will there discover the latest solutions, highly reliable and cost-effective, that thermal spray technology has created. It will be an excellent opportunity to exchange ideas with experts in the field, colleagues, customers, and others, and to learn how to cope with the challenges of the 21st century.

The attendance fees will be as follows: full participant – 4200 FF before December 31, 1997, 4800 F thereafter; student – 2000 FF before December 31, 1997, 2500 FF thereafter. For more details contact Prof. C. Coddet, LERMPS, ISPé, Route de Leupe, 90400 Sevenans, France, fax number 33 (0)3-84-58-30-30.

An advanced thermal spray short course will also be given from May 22-24, 1998, close to Nice. The attendance fee will be 4500 FF. For more details contact Prof. P. Fauchais, Faculté des Sciences, Laboratoire de Céramiques Nouvelles et Traitements de Surface, 123, Av. Albert Thomas, 87060 Limoges Cedex, France, telephone number 33 (0)5-55-45-74-35, fax number 33 (0)5-55-45-72-11.

Prof. P. Fauchais
LMCTS, University of Limoges, France

5th Conference on Thermal Plasma Processes

The European Conference on Thermal Plasma Processes (TPP) is one of the main international meetings held biennially in various countries around Europe. The four previous European Conferences were held in Odeillo, France (1990), Paris, France (1992), Aachen, Germany (1994) and Athens, Greece (1996).

As decided in Athens during TPP-4, the 5th European Conference on Thermal Plasma Processes (TPP-5) will be held in St. Petersburg, Russia, July 13-16, 1998.

The meeting in St. Petersburg will be a good opportunity to discover Russia, and our Institutes and laboratories. At the same time, we would like to remind you that our goal is to increase the European exchanges through the scientific European programs. The meeting in St. Petersburg will also be a good opportunity to participate in the European Conference for Russian scientists and scientists from republics of the former Soviet Union.

The scientific program of this meeting is focused on thermal plasma processes and new engineering clean electrical processes. We hope to point out the knowledge needed to scale up and model, as well as the diagnostic control required for the new processes.

The scheduled sessions are as follows:

- Arcs, high frequency and pulsed plasma torches fundamental aspects and technical development
- Plasma modeling and applications
- Diagnostics and on-line control
- Clusters-plasma system
- Plasma chemistry and applications
- Metallurgical processes and applications: melting, remelting, cleaning
- Material and surface treatments: spraying, cutting, deposition, hardening
- Low pressure non-equilibrium plasmas and applications
- Plasma surface interactions and electrode spots
- Transport properties and transport phenomena
- High power electrical sources
- Laser treatment of materials and plasma laser developments

Two special sessions will be devoted to plasma treatment of wastes and environmental applications, and silicon thin films for photovoltaic applications.

The conference will consist of plenary lectures, parallel oral sessions of invited and contributed papers, discussions and poster sessions.

St. Petersburg is one of the most beautiful cities in the world. It was and is now the cultural capital of Russia. It is the center of ballet and music, palaces and museums and distinguished science.

The sacramental flows of the magnificent Neva river, the great variety of churches, bridges, architectural ensembles and embankments of channels, numerous islands and white nights bring the wonderful attractiveness to our city. St. Petersburg was designed as a copy of Paris, and here there is a local Louvre – the Hermitage, a local Versailles – Peterhof. No other city in the world boasts as many palaces as St. Petersburg. We will be happy to offer tours to the Opera and Ballet theater, the Russian Museum, the Hermitage Palace, the Philharmonic Orchestra, a guided tour around the city, a cruise around the Gulf of Finland, and a cruise to Petergoff.

Lastly, we will be happy to offer excursions to the city's major laboratories and institutes working in the field of plasma and its applications. As many of you will no doubt recall, the first high frequency plasma torches were developed in St. Petersburg by Professor G. Babat in 1941.

The conference will be held at the Hotel St. Petersburg, situated on banks of the Neva, a ten minute walk from the Lenin's Square Metro Station. The cost of a single room is \$75, with double rooms going for \$95.

The conference fees are as follows: senior researcher – \$450, junior researcher and student – \$100. English will be the language for oral and poster presentation.

The important dates are as follows:

- Deadline for receipt of abstracts (1 page) – January 31, 1998
- Second announcement and acceptance notification – March 15, 1998
- Deadline for receipt of papers (5-6 pages) – May 15, 1998
- Registration payment – June 15, 1998
- Meeting in St. Petersburg – July 13-16, 1998
- Special session on waste treatment – July 15, 1998

For more information or to register please contact TPP-5, Prof. S. Dresvin, Technical University, St. Petersburg, 195251, Russia, telephone number (812) 247-64-73, fax number (812) 247-20-88.

Prof. S. Dresvin
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