

# In The News

## New Literature

### **Thin Films and Metallurgical Coatings: Deposition Techniques, Microstructures and Properties (Dépôts Physiques: techniques, microstructures et propriétés)**

Lech Pawłowski, *Presse Polytechnique et universitaires romandes, Lausanne, 2003, ISBN 2-88074-529-2.*

#### **Chapters**

1. General Introduction
2. Objectives
3. Principal Definitions
4. Films and Coatings Classification
5. Organisation of the Book
6. Summary and Principal Conclusions
7. Example of Application
8. References
9. Preparation of Substrate before Deposition
10. Objectives
11. Surface Cleaning
12. Surface Activation
13. Storage of Coated Pieces
14. Auxiliary Techniques
15. Summary and Principal Conclusions
16. References
17. Deposition Techniques
18. Objectives
19. Atomistic Methods of Film Deposition
20. Granular Methods of Coating Deposition
21. Metallurgical (Bulk) Methods of Coating Deposition
22. Summary and Principal Conclusions
23. References
24. Nucleation, Growth, and Microstructure of Films and Coatings
25. Objectives
26. Thin Films
27. Granular Coatings
28. Metallurgical (Bulk) Coatings
29. Summary and Principal Conclusions

30. References
31. Methods of Films and Coatings Characterizations
32. Objectives
33. Methods of Microstructural Analysis
34. Mechanical Properties Characterizations
35. Electrical and Magnetical Properties Characterizations
36. Physico-Chemical Properties Characterizations
37. Optical Properties Characterizations
38. Summary and Principal Conclusions
39. References
40. Properties of Coatings
41. Objectives
42. Mechanical Properties
43. Electrical and Magnetic Properties
44. Thermophysical Properties
45. Corrosion Resistance
46. Optical Properties
47. Summary and Principal Conclusions
48. References

#### **Book Summary**

The book synthesizes in a logical way the present knowledge related to thin films and thick coatings. The plan of the book follows the steps of films and coatings preparation: (1) substrate surface preparation, (2) film or coating deposition, (3) growth of deposit, (4) postdeposition treatments, and (5) methods of films and coatings characterization. The last and longest chapter presents principal properties of deposits in function of deposition techniques and material as well as examples of industrial applications. The book is based on a rich bibliography, including studies by the author. It is addressed to: (1) the graduate up to postgraduate students, (2) researchers working on the area of films and coatings, (3) professors teaching surface treatment, and, (4) the industrial users of films and

coatings. The book is written in a reader-friendly way. The successful reading and understanding of the book does not require more preparation than fundamentals of general physics and material science.

#### **About the Author**

Pawłowski obtained his Ph.D. in Chemistry at the Wroclaw University of Technology (Poland) in 1978 and finished his studies by a D.Sc. in Physics at the University of Limoges (France). His industrial appointments were in the coatings industry and included the position of project manager at W. Haldenwanger (Berlin, Germany) and consultant of Centro Sviluppo Materiali in Trent (Italy). His academic appointments included a position of senior research fellow at The Monash University in Melbourne and a technical-scientific coworker in The University of Stuttgart in Germany. In 1995, he became a university professor at the University of Artois and, since 1999, at the Ecole Nationale Supérieure de Chimie de Lille in Villeneuve d'Ascq. His research work is related to the studies of plasma spraying and properties of coatings, laser thin films by PLD, and laser thick coatings by treatment of predeposits. Pawłowski has authored and coauthored more than 60 scientific papers and a book for John Wiley, *The Science and Engineering of Thermal Spray Coatings*. He is a member of The Editorial Board of *Science and Coatings Technology* and associate editor of *Journal of Thermal Spray Technology*.

#### **Protecting Surfaces Information from General Magnaplate**

Increase the life of metal components with a free CD from General Magnaplate. The easy-to-use CD assists design engineers in selecting permanent coatings that prevent wear, friction, corrosion, sticking, galling, and chemical attack on ferrous and nonferrous metal parts.

The free CD resource compares the static and kinetic coefficients of friction (COF)

of numerous metals with 20 Magnaplate-applied "synergistic" coatings, aiding engineers in the specification of metal and coating combinations.

**Contact:** Web: <http://link.abpi.net/l.php?20031211A1>.

## Conference/Workshop Information

---

### ICEFA-I, First International Conference on Engineering Failure Analysis

---

12-14 July 2004, Lisbon, Portugal

---

The design, manufacture, operation, and maintenance of safe and reliable engineering artifacts have become increasingly important, driven by greater global awareness of issues such as safety, economy, and environment sensitivity. This has focused attention to the pivotal role of failure analysis as an essential design and management tool to help prevent disasters, accidents, and failures, and to inform the processes of design, manufacture, operation, and maintenance. As a result, the field has attracted rapidly increasing interest and resources. The First International Conference on Engineering Failure Analysis (ICEFA-I) is intended to be the first of series of international meetings for the presentation, advancement, and dissemination of failure analysis studies for the benefit of the wider world.

Paper and posters are invited that describe:

- The analysis of engineering disasters, accidents and failures,
- Designing, manufacturing, operating, and maintaining artifacts to avoid failure,
- Examples of technology transfer, and/or
- The structure, properties, and behavior of engineering materials involving detailed application of material parameters to problems in structures, components, and design.

**Contact:** Gill Heaton, ICEFA Conference Secretariat, Hillside Cottages, Wheatley Rd., Islip, Oxford OX5 2TF, U.K.; tel: +44 (0) 1865 373625; fax: +44 (0) 1865 375855; e-mail: [icefa@heaton-connexion.co.uk](mailto:icefa@heaton-connexion.co.uk); Web: [www.icefa.com](http://www.icefa.com).

### The 2004 Gordon Research Conference (GRC) on Plasma Processing Science

---

15-20 August 2004, Plymouth, New

### Hampshire

---

The program of the 2004 Conference is being finalized and will be posted on the GRC and the Plasma Processing Science website. The program will feature the latest developments in plasma processing science while emphasizing applications of science in industry.

**Contact:** Chair: Mark J. Kushner, e-mail: [mjk@uiuc.edu](mailto:mjk@uiuc.edu); or GRC, Web: <http://www.grc.uri.edu/>.

### Cold Spray 2004

---

27-28 September 2004, Akron, Ohio

---

ASM International's Thermal Spray Society will host a two-day workshop on Cold Spray Technology (Cold Spray 2004) at the Hilton Hotel in Akron, OH. This intensive two-day meeting will feature presentations from more than a dozen of the world's foremost cold spray experts who will share their knowledge and experiences with this emerging spray coating technology. Attendees will gain a basic understanding of the cold spray process, follow various R&D programs on cold spray technology, receive first-hand information on industrial applications of cold spray including the first mass-production application, and be able to network with global experts. Moreover, a sponsored industrial visit will take attendees to ASB Industries, Inc., where demonstrations of various cold spray systems will be given, including the patented ASB Mk-4 system (USA), the CGT Kinetic 3000 system (Germany), and others.

The meeting will feature:

Keynote address by Prof. Heinrich Kreye of the Federal Armed Forces University, Hamburg, Germany

Invited presentations by experts from around the world, including Australia, Germany, Korea, Russia, and the United States. Speakers will include Rick Blose (KTech, Inc. Albuquerque, NM), Dr. Andrew Debicci (Pratt & Whitney, East Hartford, CT), Dr. Tim Eden (Penn State Univ., State College, PA), Dieter Grasme (OBZ Dresel & Grasme GmbH, Germany), Dr. Dennis Helfritch (Army Research Lab.,

Aberdeen), Dr. Mahanaz Jahedi (CSIRO, Australia), Dr. Dietrich Joenke (EADS, Germany), Werner Kroemmer (Linde Gas Company, Germany), Prof. Chaghee Lee (Hanyang Univ., Korea), Prof. Roman Maev (Dynamet, Inc., Canada), Dr. Robert McCune (Ford Motor Company, Dearborn, MI), Prof. Bill O'Neill (Cambridge Univ., U.K.), Dr. Anatoli Papyrin (Cold spray patent holder, Albuquerque, NM), Dr. Sai Raj (NASA-Glenn Research Center, Cleveland, OH), Tobias Schmidt (Federal Armed Forces Univ., Germany), Dr. Mark Smith (Sandia National Labs, Albuquerque, NM), and Dr. Thomas Van Steenkiste (Delphi Research Lab., Shelby Township).

Presentations will cover topics ranging from basic science and modeling, spray systems and accessories, preparation and characterization of coatings, industrial applications, and so forth.

Targeted applications will feature specific industries such as aircraft, space, gas turbine, defense, automotive, and others.

A panel discussion featuring academic, research, and industrial experts will answer questions. Participants will include Jeff Haynes (Pratt and Whitney, West Palm Beach, FL), Peter Heinrich (Linde Gas Company, Germany), Prof. Heinrich Kreye (Federal Armed Forces Univ., Germany), Dr. Anatoli Papyrin (Cold spray patent holder, Albuquerque, NM), Dr. Jegan Karthikeyan (ASB Industries, Barberton, OH), and Dr. Mark Smith (Sandia National Labs., Albuquerque, NM).

Industrial visit to ASB Industries, Inc., for live demonstrations of various cold spray systems.

Workshop Sponsored by the ASM Thermal Spray Society. Industry Visit Sponsored by ASB Industries.

### High-Temperature Ceramic-Matrix Composites (HTCMC-5)

---

12-16 September 2004, Seattle, Washington

---

The "Fifth International Conference on High-Temperature Ceramic-Matrix Composites," HTCMC-5, will be held at the Red Lion Hotel in Seattle. Ceramic-matrix composites are enabling materials

for a number of high-temperature and demanding applications in aerospace, power generation, ground transportation, nuclear, environmental, and chemical industries. Tremendous progress has been made in technology development, manufacturing, commercialization, and applications of these materials over the last few years. However, significant challenges still remain for their widespread use in these applications.

The major objective of the conference is to promote global information exchange among researchers, technology developers, manufacturers, and users from different parts of the world. The conference will cover all areas related to science, technology, and applications of high-temperature ceramic-matrix composites. Special emphasis will also be placed on addressing key technical and economic challenges, success stories, and emerging technologies that are expected to open "new frontiers and horizons" for ceramic-matrix composites in the 21st century. Contributions reporting academic, technical, and industrial studies are welcomed.

**Contact:** Christine Schnitzer, Meetings and Expositions, The American Ceramic Society, P.O. Box 6136, Westerville, OH 43086-6136; tel: 614/794-5819; fax: 614/794-5882; e-mail: [cschnitzer@ceramics.org](mailto:cschnitzer@ceramics.org); Web: [www.ceramics.org/htcm5](http://www.ceramics.org/htcm5).

## Particles 2004 Conference

6-9 March 2004, Orlando Florida

"Particles 2004" will emphasize particle synthesis, particle characterization, and

advanced materials derived from particles.

**Contact:** John Texter, General Chair, Particles 2004, Prof. of Polymer and Coating Technology, Eastern Michigan University, College of Technology, 122 Sill Hall, Ypsilanti, MI 48197; tel: 734/487-4587; fax: 734-487-8755; e-mail: [jtexter@emich.edu](mailto:jtexter@emich.edu); Web: <http://nanoparticles.org/Particles2004>.

## 18th International Conference on Surface Modification Technologies, SMT 18

15-17 November 2004, Dijon, France

The purpose of this Conference is to provide an interactive forum for a multidisciplinary discussion on the science and technology of surface-related phenomena for all materials. Both experimental and theoretical aspects that highlight, develop, and utilize approaches to understand and improve surface phenomena have been sought. The conference will provide a forum for presenting the latest advances by research workers and engineers from academia and research laboratories.

The conference will concentrate on four major topics (which will result in four symposia):

- A-Arts and Surfaces
- B-Thermal Spraying
- C-Adhesion and Anti-Adhesion
- D-Emergent/Advanced Industrial Applications

Oral contributions will be first welcomed in these fields. This, however, does not exclude submission dealing with, for example: high-temperature coatings; biomedical coatings; wear; laser processing; PVD & CVD processes; applications of advanced coatings in aircraft/aerospace automobile, marine & electronics industries; nondestructive testing; surface hardening processes; plasma-assisted and ion beam techniques; testing of coatings; residual stresses; sample preparation techniques; metallography; advanced surface investigation techniques; and modeling.

## Symposium Liaison Committee

- Topic A: Prof. A. Giumlia-Mair, AGM Archeoanalisi, Merano, Italy
- Topic B: Dr. V. Guipont, Ecole des Mines de Paris/C2P, Evry, France
- Topic C: Dr. M. Nardin, Inst. de Chimie des Surfaces et Interfaces, CNRS, Mulhouse, France
- Topic D: Dr B. Dumont, KMETREFIMETAUX, Serfontaine, France

English is the official language.

**Contact:** M. Jeandin, Ecole des Mines de Paris, PM Fourt Materials Research Center/C2P, BP 87, F 91003 Evry Cedex - France; tel: 33 (0)1 60 76 30 33; fax: 33 (0)1 60 76 31 50; e-mail: [michel.jeandin@.ensmp.fr](mailto:jeandin@.ensmp.fr) or T.S. Sudarshan, Materials Modification Inc., 2721-D Merrilee Dr., Fairfax, VA 22031; tel: 703/560-1371; fax: 703/ 560-1372; e-mail: [sudarshan@matmod.com](mailto:sudarshan@matmod.com); Web: <http://www.congres-scientifiques.com/smt18/>.

## Recent Conferences

### Opening of "CACT" at the University of Toronto

8 September 2003, A Symposium on Thermal Spray Coatings, Toronto, Ontario, Canada

To celebrate the Grand Opening of the Centre for Advanced Coating Technologies (CACT) at the University of Toronto, the Centre hosted a Symposium on Thermal Spray Coatings, held in conjunction with the 101st Annual Technical Forum of the Canadian Ceramic Society. The

Symposium featured invited talks from several of the world's leading researchers and tours of the extensive new facilities of the CACT located in the recently completed Bahen Centre.

Speakers included:

- Emil Pfender, University of Minnesota
- Toyonobu Yoshida, University of Tokyo, "NEDO Nano-Coating Project"
- Steven Girshick, University of Minnesota, "Hypersonic Plasma Particle Deposition of Nanoparticle Films"
- Maher Boulos, University of Sherbrooke, "Powder Properties and Their

### Effect on the Properties of Plasma Sprayed Coatings"

- Sanjay Sampath, SUNY Stony Brook
- Basil R. Marple, Industrial Materials Institute, National Research Council Canada, "Comparative Study of the Abrasion Resistance of HVOF-, VPS- and APS-Deposited Nanostructured and Conventional Titania Coatings"

**Contact:** Thomas Coyle, Dept. of Materials Science and Engineering, 184 College St., Toronto, ON M5S 3E4; tel: 416/978-5647; fax: 416/978-4155; e-mail (preferred): [tom.coyle@utoronto.ca](mailto:tom.coyle@utoronto.ca).