



Preface

The **International Thermal Spray Conference 2000 (ITSC 2000)**, held 8–11 May in Montréal, Québec, Canada, represented the first full collaboration between three world-class societies to develop “the premier” international conference series on thermal spraying. ITSC is now formally a joint initiative between the Thermal Spray Society (TSS), an affiliate society of ASM International, the German Welding Society (DVS-Deutscher Verband für Schweißtechnik), and the International Institute of Welding (IIW). ITSC expands upon the successes of prior, individually sponsored thermal spray conferences by broadening the expertise, exposure and technical scope of the event. ITSC is truly an international event, rotating annually between North America, Europe and the Pacific Rim.

Recognizing the global importance of thermal spray technology, the organizers of ITSC 2000 assembled nearly 300 experts from academia, research and industry from 35 countries around the world to discuss the challenges and opportunities facing the thermal spray community now and into the 21st century. An impressive panel of plenary speakers opened the conference with key insights such as process improvements to better control properties of coatings, and innovations needed to develop new products and new markets.

The ITSC exposition represented the entire span of the thermal spray industry, with more than 50 of the world’s leading suppliers of thermal spray equipment, consumables, services and supplies. And, ITSC provided their best opportunity to reach suppliers and users, research scientists, product and design engineers and, most importantly, their customers. To further compliment the exposition, two new showcases were offered this year. The Job Shop Showcase featured 20 job shops describing their capabilities, and the Equipment Technology Showcase featured leading manufacturers of thermal spray equipment who discussed their respective equipment technologies. We also continued our tradition of offering high quality education courses for both new and experienced thermal spray technologists.

These proceedings comprise the technical papers presented at ITSC 2000. Of well over 300 submissions, 290 were accepted following a high standard of manuscript preparation in accordance with strict guidelines. The proceedings covers a broad range of topics on developments in thermal spray research and industrial applications. They are grouped topically by chapter as follows:

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| 1. Diagnostics and torch design | 10. Non-metallic materials |
| 2. Modeling and simulation | 11. Process techniques |
| 3. Structure and properties* | 12. Wear and corrosion |
| 4. Residual stress | 13. Porosity |
| 5. Microstructure* | 14. Applications |
| 6. High velocity oxygen fuel coatings | 15. Thermal barrier and high temperature coatings |
| 7. Unique coatings | 16. Quality, standards and testing |
| 8. Electric arc processes and applications | 17. Extra papers |
| 9. Formation, impact and solidification of droplets | |

* Including Cold Spray

The successful organization and administration of ITSC 2000 was the result of many cooperative efforts over many months. The organizers of the technical program, exposition and education program, as well as the staff of ASM International are to be commended for their hard work on the ITSC 2000 program and the conference proceedings.



Albert Kay
ITSC 2000 Co-Chair, North America



Prof. Dr. Erich Lugscheider
ITSC 2000 Co-Chair, Europe

1st National Thermal Spray Conference (1987) 14–17 September, Orlando (FL)

Reference: "Thermal Spray: Advances in Coatings Technology," Ed. D.L. Houck, Pub. ASM International, Materials Park, OH, USA, 1988, 426+ pages. ISBN: 0-87170-320-3. SAN: 204-7586. 59 papers published and 730 attendees.

2nd National Thermal Spray Conference (1988) 24–28 October, Cincinnati (OH)

Reference: "Thermal Spray Technology—New Ideas and Processes," Ed. D.L. Houck, Pub. ASM International, Materials Park, OH, USA, 1989, 469+ pages. ISBN: 0-87170-335-1. SAN: 204-7586. 61 papers published and 1300 attendees.

3rd National Thermal Spray Conference (1990) 20–25 May, Long Beach (CA)

Reference: "Thermal Spray Research and Applications," Ed. T.F. Bernecki, Pub. ASM International, Materials Park, OH, USA, 1991, 792+ pages. ISBN: 0-87170-392-0. SAN: 204-7586. 110 papers published and 1600 attendees.

4th National Thermal Spray Conference (1991) 4–10 May, Pittsburgh (PA)^{1 & 2}

Reference: "Thermal Spray Coatings: Properties, Processes and Applications," Ed. T.F. Bernecki, Pub. ASM International, Materials Park, OH, USA, 1991, 556+ pages. ISBN: 0-87170-437-4. SAN: 204-7586. 79 papers published and 1300 attendees.

13th International Thermal Spray Conference (1992) (5th National Thermal Spray Conference—1992) 28 May–5 June, Orlando (FL)^{1 & 2}

Reference: "Thermal Spray: International Advances in Coatings Technology," Ed. C.C. Berndt, Pub. ASM International, Materials Park, OH, USA, 1992, 1044+ pages. ISBN: 0-87170-443-9. SAN: 204-7586. 161 papers published and 1600 attendees.

6th National Thermal Spray Conference (1993) 7–11 June, Anaheim (CA)¹

Reference: "Thermal Spray: Research, Design and Applications," Ed. C.C. Berndt and T.F. Bernecki, Pub. ASM International, Materials Park, OH, USA, 1993, 691+ pages. ISBN: 0-87170-470-6. SAN: 204-7586. 105 papers published and 1250 attendees.

7th National Thermal Spray Conference (1994) 20–24 June, Boston (MA)^{1 & 2}

Reference: "Thermal Spray Industrial Applications," Ed. C.C. Berndt and S. Sampath, Pub. ASM International, Materials Park, OH, USA, 1994, 800+ pages. ISBN: 0-87170-509-5. SAN: 204-7586. 126 papers published and 1500 attendees.

8th National Thermal Spray Conference (1995) 11–15 September, Houston (TX)¹

Reference: "Thermal Spray Science & Technology," Ed. C.C. Berndt and S. Sampath, Pub. ASM International, Materials Park, OH, USA, 1995, 774+ pages. ISBN: 0-87170-541-9. SAN: 204-7586. 126 papers published and 1200 attendees.

9th National Thermal Spray Conference (1996) 7–11 October, Cincinnati (OH)^{1 & 2}

Reference: "Thermal Spray: Practical Solutions for Engineering Problems," Ed. C.C. Berndt, Pub. ASM International, Materials Park, OH, USA, 1996, 992+ pages. ISBN: 0-87170-583-4. SAN: 204-7586. 131 papers published and 1350 attendees.

10th National Thermal Spray Conference (1997) 14–18 September, Indianapolis (IN)^{1 & 2}

Reference: "Thermal Spray: A United Forum for Scientific and Technological Advances," Ed. C. C. Berndt, Pub. ASM International, Materials Park, OH, USA, 1997, 1020+ pages. ISBN: 0-87170-618-0. SAN: 204-7586. 137 papers published and 950 attendees.

15th International Thermal Spray Conference (1998) 25–29 May, Nice, France¹

Reference: "Thermal Spray: Meeting the Challenges of the 21st Century," Ed. C. Coddet, Pub. ASM International, Materials Park, OH, USA, 1998, 1693+ pages. ISBN: 0-87170-659-8. SAN: 204-7586, 272 papers published.

2nd United Thermal Spray Conference (1999) 17–19 March, Dusseldorf, Germany¹

Reference: "Tagungsband Conference Proceedings" Ed. E. Lugscheider, P. A. Kammer, Pub. DVS Deutscher Verband für Schweißen, Germany, 1999, 879+ pages. ISBN 3-87155-653-X. 170 papers published.

1st International Thermal Spray Conference (2000) 8–11 May, Montréal, Québec, Canada¹

(The first ITSC sponsored by the ASM-Thermal Spray Society, The DVS-German Welding Society, and the IIW-International Institute of Welding)

Reference: "Thermal Spray: Surface Engineering via Applied Research," Ed. C.C. Berndt, Pub. ASM International, Materials Park, OH, USA, 2000, 1383+ pages. 199 papers published.

Footnotes

¹ These proceedings are still available and can be obtained through ASM International's Member Services Center.

² These proceedings are available in SearchMore™ Thermal Spray CD-Rom and can be obtained through Cambridge Scientific Abstracts.