International Thermal Spray Conference & Exposition (ITSC 2012)

Air, Land, Water and the Human Body: Thermal Spray Science and Applications

Houston, Texas, USA
21-24 May 2012

Editors:

R. S. Lima
A. Agarwal
M. M. Hyland
Y.-C. Lau

C.-J. Li
A. McDonald
F.-L. Toma

# TABLE OF CONTENTS

## ADVANCED THERMAL SPRAY COATINGS SYMPOSIUM

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Measurements of Polymer Composite Flat Plates Coated with Aluminum-12Silicon</td>
<td>1</td>
</tr>
<tr>
<td>D. Therrien, A. McDonald, P. Mertiny</td>
<td></td>
</tr>
<tr>
<td>Microstructure Characteristics and Oxidation Behavior of Molybdenum Disilicide Coatings Prepared by Low Pressure Plasma Spraying</td>
<td>7</td>
</tr>
<tr>
<td>Y. Niu, X. Fei, H. Wang, X. Zheng, C. Ding</td>
<td></td>
</tr>
<tr>
<td>Influence of Parameter Variations on WC-Co Splat Formation in an HVOF Process Using a New Beam-Cutter Device</td>
<td>12</td>
</tr>
<tr>
<td>W. Tillmann, B. Hussong, T. Priggemeier, S. Kuhnt, N. Rudak, H. Weinert</td>
<td></td>
</tr>
<tr>
<td>Engineering HVOF-Sprayed Cr$_2$C$_2$-NiCr Coatings: The Effect of Particle Morphology and Spraying Parameters on the Microstructure, Properties and High Temperature Wear Performance</td>
<td>22</td>
</tr>
<tr>
<td>D. Poirier, J.-G. Legoux, R. S. Lima</td>
<td></td>
</tr>
<tr>
<td>Influence of Processes and Parameters on the Microstructure and Properties of Thermal Barrier Coatings Produced with a Nanostructured YSZ Powder</td>
<td>28</td>
</tr>
<tr>
<td>K. Bobzin, L. Zhao, N. Kopp, T. Warda</td>
<td></td>
</tr>
<tr>
<td>Preparation of Al/SiC Composite Coatings on the Surface of Aluminum Alloy through Atmospheric Plasma Spraying</td>
<td>34</td>
</tr>
<tr>
<td>Jianping Li, Lei Li, Zhong Yang, Yongchun Guo, Peiliu Gao</td>
<td></td>
</tr>
<tr>
<td>Recent Development of Porous Materials and Structured Surface Fabrication by Spray Deposition of Surface-Molten Particles</td>
<td>40</td>
</tr>
<tr>
<td>Chang-Jiu Li, Guan-Jun Yang, Cheng-Xin Li</td>
<td></td>
</tr>
<tr>
<td>Development of the Particle Interface Bonding in Thermal Spray Coatings for Expanding High Performance Applications</td>
<td>47</td>
</tr>
<tr>
<td>Chang-Jiu Li, Guan-Jun Yang, Cheng-Xin Li</td>
<td></td>
</tr>
<tr>
<td>Double Rare-Earth Oxides Co-doped Strontium Zirconate as a New Thermal Barrier Coating Material</td>
<td>58</td>
</tr>
<tr>
<td>H.-Y. Dong, D.-X. Wang, W.-S. Lun, W.-Y. He, W. Ma, X.-B. Zheng</td>
<td></td>
</tr>
<tr>
<td>Deposition and Characterization of Thermally Sprayed Coatings Prepared by a Nanostructured Martensitic Steel Powder</td>
<td>64</td>
</tr>
<tr>
<td>D. Zois, A. Lekatou, A. E. Karantzalis, M. Vardavoulia, A. Vazdirvanidis</td>
<td></td>
</tr>
<tr>
<td>Bond Strength Characterization of Plasma Sprayed Zirconium on Uranium Alloy by Microcantilever Testing</td>
<td>70</td>
</tr>
<tr>
<td>K. Hollis, N. Mara, R. Field, T. Wynn, P. Dickerson</td>
<td></td>
</tr>
<tr>
<td>Dynamic Corrosion and Wear Testing of Corrosion Resistant Thermal Spray Coatings and Wrought Reference Material in Chlorine Containing Conditions with Low pH Values</td>
<td>76</td>
</tr>
<tr>
<td>J. Laurila, K. Niemi, P. Vuoristo, J. Vajala</td>
<td></td>
</tr>
<tr>
<td>Optimizing NiCr Thermal Spray Coating with Process Map Methodology for High Temperature Power Plant Boiler Application</td>
<td>81</td>
</tr>
<tr>
<td>M. Oksa, T. Varis, T. Sahonen, M. Jokipii</td>
<td></td>
</tr>
<tr>
<td>Combined Diffusion Barrier and Wear-Resistant Thermal Spray Coatings on Light-Weight Charging Racks in Furnace Applications</td>
<td>87</td>
</tr>
<tr>
<td>T. Lampke, R. Drehmann, C. Rupprecht, D. Trimis, M. Gilbert, V. Uhlig</td>
<td></td>
</tr>
<tr>
<td>Casting Requirements on Light Metal Crankcases for Thermally Sprayed Fe-Based Bore Coatings</td>
<td>93</td>
</tr>
<tr>
<td>F. Ernst, D. Kabe, G. Klaus</td>
<td></td>
</tr>
<tr>
<td>Innovative Coating Developments Using a New, User Friendly HVOF and Metal Based Powders</td>
<td>98</td>
</tr>
<tr>
<td>G. R. Heath, A. Tremblay, P. Andersson, A. Arizmendi Morquecho</td>
<td></td>
</tr>
</tbody>
</table>

## APPLICATIONS AND CASE STUDY SYMPOSIUM

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Spraying of Zinc and Zinc-Aluminium Alloys for Corrosion Protection</td>
<td>104</td>
</tr>
<tr>
<td>Frank Prenger, Jochen Spietersenbach</td>
<td></td>
</tr>
<tr>
<td>A New Hybrid Process for Repair Brazing and Coating of Turbine Blades</td>
<td>110</td>
</tr>
<tr>
<td>M. Nicolaus, K. Möhwald, F.-W. Bach</td>
<td></td>
</tr>
</tbody>
</table>
Study of Delamination Induced by Laser-Drilling of Thermally-Sprayed TBC Interfaces .......................................................... 114
C. Guinard, V. Guipont, H. Proudhon, M. Jeandin, J. Girardot, M. Schneider, L. Berthe, A. Martin

Studies of Air Plasma Sprayed Thermal Barrier Coatings and Their Surface Roughness for Applications in Siemens Medium Size Gas Turbines.......................................................... 120
Xin-Hai Li, Sebastian Heinze, Håkan Brodin, Robert Eriksson

Formation of Abradable Alumina Ceramic Coatings through Deposition of Semi-Molten Ceramic Particles by Flame Spray .................................................. 126
J. Zou, C.-J. Li, H.-B. Hua, B. Chen, C.-X. Li, G.-J. Yang

High Performance Aluminum Titanium Coatings for Anti-Slip Applications .......................................................... 131
D. Wixson, S. Barker

A Laser Thermal Cycling Rig as a New Method to Characterize the Evolution of Coating Adhesion under Thermal Cycle .......................................................... 137
D. Poirier, E. Irissou, J. G. Legoux

Current and Next-Generation Titanium Blade Compatible Compressor Abradable Coatings .................................................. 143
D. Sporer, S. Wilson

Effect of 20% Gadolinia – 80% Zirconia Thermal Barrier Coating for Diesel Engine Performance .................................................. 149
L. Chandrasagar

Integrated Study of APS YSZ Coatings with Different Spray Angle .......................................................... 154
Y. K. Chen, Y. Tan, S. Tessarini, S. Sampath

Molten Zinc Corrosion Mechanism of HVOF Sprayed WC-Co Coatings .......................................................... 160
Tsai-Shang Huang

Improved Blade Tips for Abradable Coatings Used in Gas Turbines .......................................................... 166
Komal Laul, Suebali Rahemanji, Ravi Shankar, Richard Fenton, Carl Perrin, Andrew McMillan

HVOF Coating Case Study for Power Plant Process Control Ball Valve Application .................................................. 172
Luc Vernhes, David A. Lee, Dominique Poirier, Duanjie Li, Jolanta E. Klemberg-Sapieha

Role of Process Conditions on the Interfacial Fracture Toughness of Plasma Sprayed Zirconia .......................................................... 178
Y. Okajima, T. Nakamura, S. Sampath

Corrosion Testing of HVOF Coatings in High Temperature Environments for Biomass Applications .......................................................... 184
S. Paul, M. D. F. Harvey

The Effects of Abrasive Conditions on the Performance of Tungsten Carbide-Based Metal Matrix Composite Overlays .......................................................... 190
G. Fisher, T. Wolfe

Effects of PTA Torch Selection on Microstructure and Performance of WC-MMC Overlays .......................................................... 194
T. Wolfe, G. Fisher

Application of Granulated Nano Al2O3 Powders in Thermal Barrier Coatings at Elevated Temperatures .......................................................... 200
M. S. Hussain, M. R. Darvooparvar

BIOMEDICAL SYMPOSIUM

Effect of Coating Thickness on the Stress Distribution in Hip Implants .......................................................... 206
W.-Z. Wang, P. Han, S.-T. Tu, L.-B. Wang, F.-Z. Xuan

Wire Arc Spray Copper Coatings in Medical Applications .......................................................... 210
O. Sharif Ahmadian, H. Salimi Jazi, M. H. Fathi, J. Mostaghimi, L. Pershin

High Velocity Suspension Flame Sprayed (HVSFS) Bioactive Coatings for Biomedical Applications .......................................................... 215
N. Stiegler, A. Killinger, R. Gadow

Design of Experiments Analysis of Flame Sprayed PCL/PMMA Bioactive Coatings .......................................................... 219
A. Chebbi, J. Stokes

Modeling of Phenomena Occurring in Plasma Jet at Suspension Spraying of Hydroxyapatite Coatings .......................................................... 225
G. Delluc, B. Pateyron, L. Pawlowski, N. Calve, A. Denoirjean

COLD SPRAY SYMPOSIUM

Fabrication of Aluminum-Alumina Metal Matrix Composite Coatings via Cold Gas Dynamic Spraying at Low Pressure Followed by Friction-Stir Processing .......................................................... 231
Kevin Hodder, Adrian Gerlich, Julio Villafuerte, André McDonald

Gas Substrate Heat Exchange During Cold-Gas Dynamic Spraying .......................................................... 237
A. McDonald, A. Ryabinin, E. Irissou, J.-G. Legoux

Cold Spray Forming Inconel 718 .......................................................... 243
W. Wong, E. Irissou, J.-G. Legoux, F. Bernier, P. Vo, S. Yue, S. Michiyoshi, H. Fukanuma
Deposition of Amorphous Aluminum Powder Using Cold Spray

P. K. Koh, P. Cheang, K. Loke, S. C. M. Yu, S. M. Ang

Research on Corrosion Behavior of Cold Sprayed Copper Coating on Aluminum Substrate

Guosheng Huang, Daming Gu, Xiaobo Li, Lukuo Xing, Hongren Wang

Advanced Image Processing of Ag-Based Composite Powders for the Modeling of the Cold Spray Process


Metallization of a Polymer Using Cold Spray: Application to Aluminum Coating of Polyamide 66

D. Giraud, F. Borie, F. Guipont, M. Jeandin, J. M. Mathaire

Residual Stress Measurements in Cold Sprayed Tantalum Coatings

O. Bailly, T. Laguionie, L. Blanchet, M. Vardelle, A. Vardelle

Impacting Behavior of Large Oxidized Copper Particles in Cold Spraying

Weny Li, Min Yu, Xueping Guo, Hanlin Liao

Comparison of the Characteristics of CoNiCrAlY Coatings Prepared by Cold Spray and LPPS Process

M. Sone, H. Fukunuma, R. Huang, N. Ohno

Development of Nano-Porous Alumina Catalyst Support by Anodic Oxidation of Thermally and Kinetically Sprayed Aluminum Coatings


Prediction of Coating Formation in Shockwave-Induced Spray Process Through Modeling

M. Karimi, G. W. Rankin, B. Jodoin

Effect of SiC Particle Size on Microstructure and Properties of Cold Sprayed Al5056/SiCp Composite Coatings

Min Yu, Weny Li, Xinian Suo, Hanlin Liao

Kinetic Metallization Repair of Acelad

R. Tapphorn, H. Gabel, K. Hashimoto, T. Crowe

Kinetic Metallization™ of Interior Diameter Bores

R. Tapphorn, H. Gabel, K. Hashimoto, T. Crowe

Effect of Substrate Preheating on Bonding Strength of Cold-Sprayed Mg Coatings


Phase Transformation of Cold-Sprayed Ni/Al-Al2O3 Composite Coatings during Post-Spraying Annealing Treatment

G-J. Yang, S-N. Zhao, C-X. Li, C-J. Li

As Coated Compounding of Intermetallics from Feedstock of High and Low Melting Points by Cold Spraying

K. H. Ko, J. O. Choi, H. Lee

Influence of Accelerating Gas Flow Rate on Optical Property and Cohesion/Adhesion of Vacuum Cold Sprayed TiO2 Scattering Layer

X-I. He, G-J. Yang, C-X. Li, C-J. Li, S-Q. Fan

Deposition Behavior and Microstructural Features of Vacuum Kinetic Sprayed AlN

H. Park, J. Heo, Cao Fei, J. Kwon, K. Kang, G. Bae, C. Lee

Restoration of Damaged Aircraft Skin by Cold Spray Technique: The Advantages and the Challenges

M. Yandouzi, B. Jodoin

Corrosion Protection of Mg-Alloys with Cold Sprayed Composite Coatings

E. Mavea, D. Dzhurinska, V. Leshchinsky, R. Gr. Maev

Passive and Pulse–Echo Ultrasonic Monitoring of Cold Spray Process

R. Gr. Maev, S. Titov, V. Leshchinsky

Cold Spraying of Nickel Using High-End Parameter Sets

A. List, S. P. Buschmann, F. Gartner, T. Klassen

Cold-Spraying of Ti3AlC MAX-Phase Coatings

H. Gutzmann, F. Gartner, T. Klassen, D. Hoeche, C. Blavert

Effect of Substrate Temperature on Cold-Gas Sprayed Coatings on Ceramic Substrates

K.-R. Ernst, J. Braeutigam, F. Gaertner, T. Klassen

Influence of Chemical Composition of WC Cermet Powders on Cold Spraying

K. Sato, H. Furukawa, J. Kitamura, K. Sato, D. Seo, K. Ogawa

ELECTRONIC AND SEMICONDUCTOR APPLICATIONS SYMPOSIUM

Atmospheric Plasma Sprayed Forsterite (Mg2SiO4) Coatings: An Investigation of the Processing-Microstructure-Performance Relationship

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Spray Coatings - Semiconductor Equipment Design and Process Chamber Requirements 40 Nanometer and Beyond</td>
<td>390</td>
</tr>
<tr>
<td>Influence of Thermal Spray Parameters on Two-Wire Arc Aluminum Semiconductor Equipment Coatings</td>
<td>393</td>
</tr>
<tr>
<td>Acoustic Emission Analysis by Twin Wire Arc Spraying Using Cored Wires with Different Powder Size</td>
<td>409</td>
</tr>
<tr>
<td>Instability of the Arc Spraying Using Cored Wires</td>
<td>416</td>
</tr>
<tr>
<td>Structural and Properties Relationship of Alumina Reinforced Inconel Cold Gas Sprayed Coatings</td>
<td>425</td>
</tr>
<tr>
<td>Robot Trajectory Generated on Free-Form Work Pieces for Thermal Spraying</td>
<td>429</td>
</tr>
<tr>
<td>Control of Wire Arc Spraying Using Artificial Neural Networks for the Production of Thin-Walled Moulds for Carbon Fiber Reinforced Plastics</td>
<td>436</td>
</tr>
<tr>
<td>High Velocity Suspension Flame Spraying and Suspension Plasma Spraying of Oxide Ceramics</td>
<td>442</td>
</tr>
<tr>
<td>Robot Trajectory Planning for High Quality Thermal Spray Coating Processes on Complex Shaped Components</td>
<td>448</td>
</tr>
<tr>
<td>Numerical Analysis of Solution Mixture and Torch Design in High-Velocity Suspension Flame Spraying</td>
<td>454</td>
</tr>
<tr>
<td>Application of HVOF and HVSFS for High Performance Mass Transport Vehicle Chassis Components</td>
<td>460</td>
</tr>
<tr>
<td>HVOF Process Control Enabling Strategies</td>
<td>465</td>
</tr>
<tr>
<td>Effect of Surface Roughness, Wettability and Temperature on Ceramic Droplet Flattenning</td>
<td>472</td>
</tr>
<tr>
<td>Effect of Base Metal on the Thermal Cycle Properties of Heat-Resistant Plasma Sprayed Coatings</td>
<td>485</td>
</tr>
<tr>
<td>Improving the Properties of Plasma and HVOF Sprayed Alumina Coatings by Chromia Addition</td>
<td>488</td>
</tr>
<tr>
<td>Military Adoption of Kinetic Metallization</td>
<td>494</td>
</tr>
<tr>
<td>Kinetic Metallization™ of Ceramic Armor Tiles</td>
<td>500</td>
</tr>
<tr>
<td>Kinetic Metallization™ – Repair of IVD Aluminum</td>
<td>504</td>
</tr>
<tr>
<td>Thermally Enhanced Bonding and Mechanical Properties of Kinetic Sprayed Al Deposit for Double-Layered Cu Liner</td>
<td>510</td>
</tr>
</tbody>
</table>
OIL AND GAS SYMPOSIUM

Cold-Sprayed WC-Ni-Cu MMC Coatings with Improved Hardness
N. Melendez, A. McDonald, G. Fisher

Interconnected Porosity Modification of Plasma Sprayed Alumina Coating Using Excimer Laser Surface Treatment
O. Amsellem, F. Pauchet, M. Jeandin, V. Guipont

High Velocity Air-Fuel Spraying and Its Applications in Oil and Gas Industry
A. Verstak, G. Kasinski

The Effects of Carbide Characteristics on the Structure and Performance of Tungsten Carbide-Based Coatings, Deposited by HVOF-Spraying.
G. Fisher, T. Wolfe

Thermal Spray Coatings for Application in Petrochemical Field: A Comparison of Tungsten Carbide, Chromium Carbide and Inconel 625
A. Scrivani, A. Giorgetti, F. Bianchi, L. Campanini, L. Coppelletti, H. Keller

Improved Coatings for Extended Design Life of 22%Cr Duplex Stainless Steel in Marine Environments
S. Paul, C. M. Lee, M. D. F. Harvey

Performance of Corrosion Resistant Arc Spray Coatings as a Function of Spray Parameters
J. Cheney, G. Kasinski

Utilizing Computational Metallurgy to Design Amorphous and Nanocrystalline Coatings for Wear and Corrosion Resistance
J. Cheney, G. Kasinski

POSTER SYMPOSIUM

Spray Operating Parameters Optimization Based on Artificial Intelligence during Plasma Process

Oxidation Behavior of TiAl3-Al Composite Coating on γ-TiAl Based Alloy at 950° C
J. Yang, L. Kong, X. Cui, Y. Tao, T. Li, T. Xiong

Multi-Response Optimization of Process Parameters for Low-Pressure Cold Spray Coating Process Using Taguchi and Utility Concept
Taran Goyal, R. S. Walla, T. S. Sidhu, H. P. S. Sidhu

Measurement of the Young’s Modulus of Thermal Spray Coatings by Means of Several Methods
W. Tillmann, U. Selvadurai, W. Luo

Influences of Spray Conditions on the Morphologies of Copper Splat in Cold Spray Process
Wenhua Ma, Renzhong Huang, Hirotsuka Fukunuma

Effect of Particle Velocity on Cold Sprayed Stainless Steel Deposits
Renzhong Huang, Wenhua Ma, Hirotsuka Fukunuma

Bonding Mechanism in Cold-Sprayed Aluminum Coatings: Localized Interatomic Bonds
Yinyin Zhang, Jishan Zhang

Microstructure and High-Temperature Corrosion Behavior of Wire-Arc Sprayed Ni-Based Coatings
Z. Zhou, X. Z. Zhao, D. Y. He, R. Li, J. M. Jiang, Q. Y. Zhao

A Comparison of Thermal Shock Behavior between APS and Low-Energy VLPPS ZrO2-7%Y2O3 Thermal Barrier Coatings

Knudsen Effect on the Computed Effective Thermal Conductivity of Thermal Spray Coatings
J. H. Qiao, R. Bolot, H. L. Liu, C. Coddet

The Influence of Titanium Sub-Oxides in Thermal Sprayed Coatings
M. Gardon, J. M. Guilemany

Solid Oxide Fuel Cells Produced by Atmospheric Plasma Spray Technology: Structural and Electrochemical Characterization

Influence of Al2O3 Content on the Microstructure and Microhardness of NiAl-Al2O3 Composites with Micro-sized Al2O3 Strengthening Particles by Plasma Activated Sintering
G.-J. Yang, S.-N. Zhao, C.-X. Li, C.-J. Li

Microstructure and Properties of Porous Ni50Cr50-Al2O3 Cermet Support for Solid Oxide Fuel Cells
Shan-Lin Zhang, Cheng-Xin Li, Chang-Jiu Li, Guan-Jun Yang

Effects of Substrate Treated by Dry-Ice Blasting on the Formation of CoNiCrAlY Splats
S.-J. Dong, B. Song, H.-L. Liao, C. Coddet, B. Hansz
Property Improvement of Plasma-Sprayed FeAl Coating by Dry-Ice Blasting ................................................................. 651
B. Song, S.-J. Dong, H.-L. Liao, C. Coddet, B. Hansz, T. Grosdidier

Preparation and Characterization of Super-Hydrophobic Surface through Particle Deposition by Vacuum Cold Spray ................................................................. 657
T. Guo, C.-J. Li, G.-J. Yang, C.-X. Li, G.-J. Qiao

Process and Microstructure of Nano-Zirconia Coatings Prepared by Solution Plasma Spraying ....................................................... 664
Hai Yang

Characterization of Nonmelted Particles in Plasma-Sprayed Al2O3 Coatings by Scanning Electron Microscopy, Raman Analysis and X-Ray Diffraction Analysis ............................................... 669
G.-J. Yang, C.-X. Li, C.-J. Li

Epitaxial Grain Growth during Splat Cooling of Alumina Droplets Produced by Atmospheric Plasma Spraying ................................................................. 676
E.-J. Yang, G.-J. Yang, X.-T. Luo, C.-J. Li, M. Takahashi

Fabrication of Porous Stainless Steel through Semi-Molten Spray Particles Deposition by Flame Spraying ................................................................. 681
J.-T. Yao, C.-J. Li, G.-J. Yang, C.-X. Li

Adhesive Strength and Cohesive Strength of Thick LPPS W Coating on CuCrZr Substrate ................................................................. 686

Effect of Powder Structure on the Adhesion and Electrical Properties of TiN Coatings Deposited by Vacuum Cold Spray ................................................................. 689
Y.-Y. Wang, Y.-J. Zhang, Y. Liu, C.-J. Li, G.-J. Yang

Effect of Processing Parameters on the Deposition Characteristics and Microstructure of Vacuum Kinetic Sprayed TiN Layer ................................................................. 694
F. Cao, H. Park, W. Yong, C. Lee

In Vitro Cytocompatibility of Plasma-sprayed Dicalcium Silicate/Zirconia Composite Coatings ................................................................. 699
Y. T. Xie, X. B. Zheng, L. P. Huang, C. X. Ding

Bilayer Plasma-Sprayed Alumina for Optical Applications ................................................................. 703
J. Marthe, E. Meillot, F. Enguehard, G. Jeandel

Evaluation of Sprayed Coatings by Electrical Method ................................................................. 708
Y. Morishawa, T. Maruyama

Implementation of a Low Cost Monitoring and Control System to a Radial Injection Plasma Spray Process Towards Manufacturing of High-Quality, Consistent Coatings at Improved Efficiency and Lower Cost ................................................................. 712
V. Matikainen, K. Niemi, M. Kylmälahti, P. Vuoristo, J. Larjo, N. Kritka, I. Linden

RESEARCH AND DEVELOPMENT (ACADEMIA AND LABS) SYMPOSIUM

Flattening Mechanism of Thermal Sprayed Particles ................................................................. 718
M. Fukumoto, K. Yang, S. Yoshida, D. Mano, M. Yamada, T. Yasui

In-Flight Particle Characterization and Coating Formation of Yttria-Stabilized Zirconia under Low Pressure Plasma Spray Condition ................................................................. 724

High-Temperature Oxidation Behavior of Fe-25Cr-5Al Arc Spraying Coatings ................................................................. 729
Yu. Korobov, M. Filipov, S. Nevezhin, ?. Karabanalov

Study on the Mechanism of Adhesion Improvement Using Dry-Ice Blasting for Plasma-Sprayed Al2O3 Coatings ................................................................. 734
S.-J. Dong, B. Song, H.-L. Liao, C. Coddet, B. Hansz

A Simplified Model for Prediction of HVOF NiCr Coating Properties through Experimental Design and Diagnostic Measurements ................................................................. 740
D. Zois, T. Wentz, S. Sampath

Multiple-Approach Evaluation of WSP Coatings Adhesion/Cohesive Strength ................................................................. 746
R. Musalek, M. Vilemova, J. Matejicek, V. Pejchal

Void Formation and Spatial Distribution in Plasma Sprayed Nd-Fe-B Coatings ................................................................. 752
J. A. Gan, C. C. Berndt, Y. C. Wong, J. Wang

Adhesion Properties of Sprayed Coatings on Substrate Blasted by Multiangle Blasting ................................................................. 758
T. Maruyama, T. Kishita
SURFACE ENGINEERING SYMPOSIUM

Improvement of Aluminum Coating Behaviours by Hybrid Process Including Plasma Spraying and Laser Ablation
S. Costil, Ch. Verdy, G. Montavon, K. Wittmann-Teneze, S. Methout, L. Bianchi

Investigation of Wear and Corrosion Protection of AISI20 Coatings Produced by Thermal Spraying and Laser Cladding on AZ31B
K. Bobzin, N. Kopp, T. Warda, C. Schulz, G. Rolink, A. Weisheit

In-situ Processing of Functional Graded Coatings by Means of Atmospheric Plasma Spraying
Wolfgang Tillmann, Leif Hagen, Iris-Aya Laemmerhirt


Erosion and Abrasion Resistance of Fe3B-Based Arc-Sprayed Coatings and Weld Overlays Containing Chromium and Carbon
S. Dallaire

SUSPENSION AND SOLUTION PLASMA SPRAY SYMPOSIUM

The Influence of Process Equipment on the Properties of Suspension Plasma Sprayed Yttria-Stabilized Zirconia Coatings
M. Marr, D. Waldbilleig, O. Kesler

Thermal Diffusivity and Conductivity of Yttria Stabilized Zirconia Coatings Obtained by Suspension Plasma Spraying
L. Latka, L. Pavlovski, S. Valette, B. Pateyron, J. P. Lecompte, A. Denoixjean, A. Cattini, R. Kumar

Mechanical Properties of Yttria and Ceria Stabilized Zirconia Coatings Obtained by Suspension Plasma Spraying
L. Latka, L. Pavlovski, A. Cattini, A. Denoixjean, D. Chicot, S. Kozerski, F. Petit

Influence of Spray Parameters and Characteristics of Solutions on Microstructure and Phase Composition of Solution Precursor Atmospheric Plasma Sprayed (SPPS) Mn-Co Spinel Coating
J. Puranen, J. Laakso, L. Hyvärinen, M. Kymlälahti, P. Fuoristo

Novel Insights into Liquid Behavior in Atmospheric Plasma Jets
D. Soysal, A. Ansar

Porous Ultra-Capacitor Electrodes Fabricated by Solution Precursor Plasma Spray: Molybdenum Oxide vs. Molybdenum Nitride
M. Golozar, K. Chien, T. W. Coyle

TECHNOLOGY ADVANCES IN THERMAL SPRAY SYMPOSIUM

Process Conditions and Microstructures of Ceramic Coatings by Gas Phase Deposition Based on Plasma Spraying
G. Mauer, A. Hospach, N. Zotov, R. Vajen

A Laser Surface Texturation to Control the Coating-Substrate Interface
A. Lamraoui, S. Costil, C. Langlade, A. Roman

Influence of the Spray Angle on the Characteristics of HVOF Sprayed Coatings Processed by Means of Fine WC-12Co (2-10 μm) Powders
W. Tillmann, I. Baumann, P. Hollingsworth, I.-A. Laemmerhirt

In Situ Synthesis of FeAl Dense Coatings by Very Low Pressure Reactive Plasma Spraying
L. Zhu, R. Bolot, H. Liao, C. Coddet, N. Zhang

Preparation and Characterization of Porous Molybdenum by Low-Velocity Flame Spraying of Semi-Molten Particle Deposition
Biao Chen, Chang-Jiu Li, Guan-Jun Yang, Juan-Tao Yao, Hui-Bin Huo, Cheng-Xin Li

Deposition of WC-Co Coatings by a Novel High Pressure HVOF
B. Sun, H. Fukunuma

Characterization of Yttria Coatings Synthesized by Conventional DC Plasma Spray and a Novel Plasma Torch
M. Saeidfar, H. R. Salimijazi, R. Emadi, J. Mostaghimi, L. Pershin, Thomas W. Coyle

Improvement of Coating Properties in Three-Cathode Atmospheric Plasma Spraying