

International Thermal Spray Conference (ITSC 2010)

Global Solutions for Future Application

Singapore
3-5 May 2010

ISBN: 978-1-7138-6086-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2010) by DVS Media GmbH
All rights reserved.

Printed by Curran Associates, Inc. (2024)

For permission requests, please contact DVS Media GmbH
at the address below.

DVS Media GmbH
P. O. Box 10 19 65
40010 Dusseldorf
Germany

Phone: 49 (0)211 / 1591-0
Fax: 49 (0)211 / 1591-150

media@dvs-hg.de

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

New Industrial Applications for Cold Spraying 1 <i>S. Hartmann</i>	1
Transmission Electron Microscopy of Cold Sprayed Titanium 4 <i>P. C. King, M. Jahedi</i>	4
Wear Behaviour and Performance of a Cost-Effective Iron-Based, Carbide-Reinforced, Sintered Coating 10 <i>M. Lugbauer, E. Badisch, A. Kröll</i>	10
Structure and Tribological Characteristics of HVOF Coatings Sprayed from Powder Blends of Cr ₃ C ₂ -25NiCr and NiCrBSi Alloy 16 <i>A. Määttä, U. Kanerva, P. Vuoristo</i>	16
Characterization of High-Temperature Abrasive Wear of Cold-Sprayed FeAl Intermetallic Compound Coating 21 <i>C.-J. Li, H.-T. Wang, G.-J. King, S.-N. Zhao, C.-G. Bao</i>	21
New Conventional Plasma Gun with High Performance: ProPlasma HP 28 <i>A. Allimant, D. Billières</i>	28
TriplexPro-200 Gun Platform: Impacting All Operational Aspects of Thermal Spraying 33 <i>D. Hawley, C. Dambra, R. Molz</i>	33
Yttria Deposition by a Novel Plasma Torch 38 <i>L. Pershin, J. Mostaghimi</i>	38
Investigation of Atmospheric Plasma Sprayed Tungsten Carbide Cobalt Coatings Using Statistical Design of Experiments 42 <i>W. Tillmann, E. Vogli, B. Krebs</i>	42
Plasma Sprayed NiCr Coatings Using a Gas Shroud System 49 <i>M. F. Morks, C. C. Berndt</i>	49
Composite Coatings with Drag Reduction and Self-Cleaning Properties 55 <i>J. Wilden, V. E. Drescher, P. Schaaf, S. Günschmann</i>	55
Thermally Sprayed Oxidation Protection Coatings for γ -TiAl Substrates 60 <i>K. Bobzin, T. Schläfer, T. Warda, M. Brühl</i>	60
Relationships Between Coating Microstructure and Thermal Conductivity in Thermal Barrier Coatings – a Modelling Approach 66 <i>I. Tano, M. Gupta, N. Curry, P. Nylén, J. Wigren</i>	66
Oxidation Behaviour of MCrAlY Bond Coats Manufactured by Plasma, HVOF and Cold Gas Dynamic Spraying 73 <i>P. Richer, M. Yandouzi, L. Beauvais, B. Jodoin</i>	73
Microstructure and Mechanical Properties of Cold Spray Titanium Coatings 80 <i>S. Gulizia, A. Trentin, S. Vezzù, S. Rech, P. King, M. Jahedi, M. Guagliano</i>	80

Influence of Helium and Nitrogen Gases on the Properties of Cold Gas Dynamic Sprayed Pure Titanium Coatings	84
<i>W. Wong, E. Irissou, J.-G. Legoux, S. Yue</i>	
Layer Formation of Cold-Sprayed Ceramic Titanium Dioxide Layers on Metal Surfaces	90
<i>J.-O. Kliemann, H. Gutzmann, F. Gärtner, T. Klassen, I. Jursic, C. Borchers</i>	
HVOF Spraying of Ultrahigh Boron-High Carbon Tool Steel Coating for Wear Resistance Applications.....	96
<i>B. Rajasekaran, G. Mauer, R. Vaßen, A. Röttger, S. Weber, W. Theisen</i>	
Computational Investigation of Warm Spray	100
<i>H. Tabbara, S. Gu, G. McCartney</i>	
Correlation of Wear Resistant Functions of HVOF and Warm Sprayed WC-Co Coatings with In-Flight Particle Characteristics.....	105
<i>K. Sato, J. Kitamura, G. Raman, M. Watanabe, M. Komatsu, S. Kuroda</i>	
Plasma Sprayed LSCF Oxygen Electrode for SOFC.....	108
<i>A. Ansar, D. Soysal, Z. Ilhan, N. Wagner</i>	
Plasma Spraying of Lanthanum Silicate Electrolytes for Intermediate Temperature Solid Oxide Fuel Cells (ITSOFCs).....	114
<i>S. Dru, E. Meillot, K. Wittmann-Teneze, M.-L. Saboungi, R. Benoit</i>	
NIR (Near-Infra-Red) Sensor – an Alternative Diagnostic Tool for the Online Process Control of Thermal Spray Processes.....	120
<i>A. Schwenk, A. Wank, T. Wallendorf, S. Marke</i>	
The Next Step in Intelligent Gun Technology – EvoLink for Plasma Spraying	124
<i>M. Koller, A. Kilchenmann</i>	
Measurement of Particle Parameters in Detonation Spraying	130
<i>I. Smurov, D. Pervushin, Yu. Chivel, B. Laget, V. Ulianitsky, S. Zlobin</i>	
Education, Training and Certification in Thermal Spraying	135
<i>R. Huber, A. Ohliger-Volmer, F. Zech</i>	
GTS – An Important Regulator for Thermal Spray Technology	140
<i>P. Heinrich, C. Penszior</i>	
The Shear Test for Thermally Sprayed Coatings in Quality Management.....	149
<i>R. Winkler, S. Hartmann, F. Deuerler</i>	
Colferoloy®—An Iron-Based Alternative for Wear Resistance Applications	153
<i>G. C. Stratford, A. J. Battenbough, P. J. Allnatt, H. Burkard</i>	
Thermally Sprayed Fine Fe-Based Materials for Wear Protection Applications in the Printing Industry.....	158
<i>K. Bobzin, T. Schlaefer, T. Warda, M. Schaefer</i>	
Cold Spraying of Zn and Zn-Alloy Coatings for Print	163
<i>K. Onizawa, J. Jansen, M. Schulze, F. Gärtner, T. Klassen</i>	

Evaluation of the Photocatalytic Activity of TiO ₂ -Coatings Prepared by Different Thermal Spray Techniques.....	167
<i>H. Gutzmann, J.-O. Kliemann, R. Albrecht, F. Gärtner, T. Klassen, F.-L. Toma, L.-M. Berger, B. Leupolt</i>	
Deposition of TiO ₂ Ceramic Particles on Cold Spray Process	172
<i>M. Yamada, H. Isago, K. Shima, H. Nakano, M. Fukumoto</i>	
The Performance of Different WC-Based Cermet Coatings in Oil and Gas Applications – A Comparison	177
<i>H. Meng, A. Neville, P. Gourdjji, X. Hu</i>	
Cavitation Erosion Properties and Fracture Morphology of Thermal Spray Coatings	183
<i>A. Kanno, T. Takabatake, Y. Namba, K. Tani, S. Uematsu, S. Sugasawa, M. Yoshioka, Y. Ishihara</i>	
Comparison of Al ₂ O ₃ and Al ₂ O ₃ -TiO ₂ Coatings Manufactured by Aqueous and Alcoholic Suspension Plasma Spraying	189
<i>G. Darut, S. Valette, G. Montavon, H. Ageorges, A. Denoirjean, P. Fauchais, E. Klyatskina, F. Segova, M. D. Salvador</i>	
Duration and Reliability of Axial Suspension Plasma Spray Process	195
<i>Z. Tang, P. Hartell, G. Masindo, N. Bogdanovic, I. Yaroslavski, H. Kim, J. Restrepo, D. Ellsworth, A. Burgess</i>	
Crystal and Micro Structures of Plasma Sprayed Yttrium Oxide Coatings by Axial Injection of Fine Powder Slurries	199
<i>J. Kitamura, H. Mizuno, K. Sato, Z. Tang, A. Burgess</i>	
Influence of Feedstock Powder for Fabrication of Aluminum Nitride in Reactive Atmospheric Plasma Spray Process	205
<i>M. Shahien, M. Yamada, T. Yasui, M. Fukumoto</i>	
Vapor Phase Deposition Using a Plasma Spray Process	211
<i>K. Von Niessen, M. Gindrat</i>	
Selective Impact of Industrial Gases on the Thermal Spray Process.....	220
<i>W. Krömmmer, P. Heinrich</i>	
The Use of National and EC Public Funds for Financing R&D Activities: The Case of a Thermal Spray Shop	224
<i>S. Meneghetti, C. Giolli, A. Giorgetti, A. Scrivani</i>	
Measurement of Particle Emissions Generated by Arc Spray and Flame Spray Processes.....	230
<i>D. Billières, D. Bémer, I. Subra, M. Lecler, R. Régnier, Y. Morele, J. Gutha</i>	
Portable High Pressure Cold Spray Process – Equipment, Coatings and Applications.....	235
<i>J. Karthikeyan, C. M. Kay, H. Hoell</i>	
Potential of Cold Gas Spraying in Power Electronic Applications	239
<i>K.-R. Donner, F. Gaertner, T. Klassen</i>	
Study of the Influence of Pre-Heated Al6061 Substrate Temperature on Al Coatings Deposited by Cold Spray	245
<i>S. Rech, A. Trentin, S. Vezzù, J.-G. Legoux, E. Irissou, M. Guagliano</i>	

Influence of Substrate Surface Temperature on the Microstructure and Properties of Plasma-Sprayed Al ₂ O ₃ Coatings	251
<i>S. Hao, C.-J. Li, G.-J. Yang, Y.-Z. Xing</i>	
Thermophysical Studies on Thermally Sprayed Tungsten Carbide-Cobalt Coatings.....	258
<i>S. Thiele, K. Sempf, K. Jaenicke-Roessler, L.-M. Berger, J. Spatzier</i>	
Comparative Study of the Electrical Properties and Microstructures of Thermally Sprayed Alumina and Spinel Coatings	264
<i>F.-L. Toma, S. Scheitz, L.-M. Berger, V. Sauchuk, M. Kusnezoff</i>	
APS-Al ₂ O ₃ Coatings Versus Arc-Sprayed and Plasma-Anodised Al Layers	270
<i>T. Lampke, D. Meyer, H. Pokhmurska, B. Wielage</i>	
Microstructures of Metallic NiCrBSi Coatings Manufactured Via Hybrid Plasma Spray Process	275
<i>N. Serres, F. Hlawka, S. Costil, C. Langlade, F. Machi</i>	
Microstructure and Enhanced Mechanical Properties of WC-Co Coatings Obtained by Warm Spraying	281
<i>S. Kuroda, G. Raman, M. Watanabe, M. Komatsu, K. Sato, J. Kitamura</i>	
Wire Arc Sprayed Iron-Based Anti-Corrosion Coatings for Waste Incineration Plants.....	286
<i>J. Wilden, V. Drescher, M. Djahanbakhsh, R. Durham, M. Schütze</i>	
Effect of M-CrAlY Coating for Corrosion Resistance in Specific High Temperature Atmosphere.....	290
<i>A. Niwa, K. Hamashima</i>	
Microstructure and NO ₂ Sensing Performance of APS ZnO Coatings.....	294
<i>C. Zhang, M. Debliquy, H. Liao</i>	
Tungsten-Based Coatings to Increase the Lifetime of Permanent-Mold Casting Molds.....	301
<i>J. Wilden, V. E. Drescher</i>	
Improved Hardfacing for Drill Bits and Drilling Tools.....	306
<i>J. A. Sue, H. Sreshta, B. H. Qiu</i>	
The Influence of Particle Temperature, Particle Velocity and Coating Surface Temperature on the Sliding Wear Performance of TiO ₂ -Cr ₂ O ₃ Coatings.....	313
<i>R. Trache, L.-M. Berger, S. Saaro, R. S. Lima, B. R. Marple</i>	
Extension of Erosion Life of Turbine Housing for Ship by Thermal Spray	319
<i>K. Sonoya, M. Nakamura, K. Ishida</i>	
Wear Properties of Ni-Based Composite Coatings Sprayed by HVAF.....	323
<i>C. Wu, K. Zhou, M. Liu, C. M. Deng, C. G. Deng</i>	
Mathematical Modelling and Simulation of a Kerosene Driven HVOF-Process	327
<i>K. Bobzin, N. Bagcivan, M. Schäfer</i>	
Cold Spraying for Titanium Dioxide Coatings with High Photocatalytic Bactericidal Activity	333
<i>J.-O. Kliemann, H. Gutzmann, F. Gärtner, T. Klassen, H. Gabriel</i>	
Flattening and Cooling of Millimeter- And Micrometer-Sized Alumina Drops	337
<i>S. Goutier, M. Vardelle, J. C. Labbe, P. Fauchais</i>	
Effect of Annealing on Microstructure of Cold Sprayed C-BNp/NiCrAl Composite Coating.....	344
<i>X.-T. Luo, C.-J. Li, G.-J. Yang</i>	

Coating of Aluminum Components with Iron-Based Nanocrystalline Solidifying Materials to Improve Wear Resistance.....	350
<i>J. Wilden, V. E. Drescher, O. Lehmann</i>	
PIV Measurements of Metallic Powders Produced by Liquid Metal Atomization Using De Laval Nozzle.....	356
<i>O. Khatim, M. P. Planche, L. Dembinsky, C. Coddet, Y. Bailly, F. Guermeur, L. Girardot</i>	
Columnar Structured Thermal Barrier Coatings (TBCs) by Thin Film Low Pressure Plasma Spraying (LPPS-TF TM).....	362
<i>A. Hospach, G. Mauer, R. Vaßen, D. Stöver</i>	
Effect of Heat Treatment on Porosity and Corrosion Performance of Cold Sprayed Titanium Deposits.....	366
<i>T. Hussain, D. G. McCartney, P. H. Shipway, T. Marrocco</i>	
Relations Between in Flight Particle Characteristics and Coating Properties by HVOF-Spraying	372
<i>W. Tillmann, E. Vogli, B. Hussong, S. Kuhnt, N. Rudak</i>	
Consolidation of Al ₂ O ₃ /Al Nanocomposite Powder by Cold Spray	378
<i>D. Poirier, J.-G. Legoux, R. A. L. Drew, R. Gauvin</i>	
Thermal Spray Forming of High-Efficiency, Metal-Foam Heat Exchanger Tubes.....	385
<i>N. Tsolas, S. Chandra, H. Salimjazi, V. I. Pershin, J. Mostaghimi</i>	
A Preliminary Study of the Oxidation Behavior of TBC with Cold Spray CoNiCrAlY Bond Coat.....	391
<i>W. R. Chen, E. Irissou, J.-G. Legoux, X. Wu, B. R. Marple</i>	
Characterization of Thermo-Mechanical Properties for Thermal Sprayed NiCoCrAlY Coatings	397
<i>A. Fasth, P. Nylén, N. Markocsan, R. Mušálek</i>	
Challenges for Plasma Spray Deposition of Decomposition-Prone Perovskite Coatings	402
<i>M. O. Jarligo, G. Mauer, D. Mack, R. Vassen, D. Stöver</i>	
Microstructure of Thermal Sprayed Silicon Coatings Using Various Particle Sizes and Spray Conditions	407
<i>D. D. Jackson, M. Sereda, R. Gansert</i>	
Deposition of NiO/YSZ Composite and YSZ by Suspension Plasma Spray on Porous Metal	412
<i>Y. Wang, J.-G. Legoux, R. Neagu, R. Hui, R. Maric, B. R. Marple</i>	
Plasma Sprayed and Electrospark Deposited Zirconium Metal Diffusion Barrier Coatings	420
<i>K. J. Hollis, M. I. Pena</i>	
Study on Microstructure and Electrochemical Performance of Ni/YSZ Anode Deposited by APS.....	426
<i>C.-X. Li, R.-T. Li, G.-J Yang, C.-J Li</i>	
The Structure and Properties of Plasma Sprayed Fe Doped Manganese Cobalt Oxide Spinel Coatings for SOFC Metallic Interconnectors	431
<i>J. Puranen, L. Lagerbom, L. Hyvärinen, M. Kylmälahti, P. Vuoristo</i>	
Expansion of the Applicable Range of HVOF Process Conditions.....	436
<i>A. Wank, A. Schwenk, M. Liu, K. S. Zhou, C. M. Deng, C. G. Deng</i>	
Relationships Between Process Parameters, Microstructure and Adhesion Strength of HVOF Sprayed IN718 Coatings.....	442
<i>C. Lyphout, P. Nylén, L. Östergren</i>	

Development of a Low-Temperature, Oxy-Fuel (LTOF) Thermal Spray Gun	448
<i>R. Dhiman, F. Farhadi, L. Pershin, S. Chandra, J. Mostaghimi</i>	
Evaluation of Boron Carbide Based Thermal Sprayed Coatings for Tribological Applications	453
<i>C. R. C. Lima, M. J. Rosales, F. Camargo</i>	
Effects of Nanosize Particles on the Intermetallic Compound Formations of Cold Sprayed Coatings	457
<i>H. Lee, J. O. Choi, K. H. Ko</i>	
Comparison of Cold Spray and Detonation Coatings Properties.....	463
<i>I. Smurov, D. Pervushin, V. Ulianitsky, S. Zlobin, A. Sova</i>	
Effect of Surface Morphology of MCrAlY Bond Coats on the Isothermal Oxidation Behavior	467
<i>Y. Li, C.-J. Li, Q. Zhang, L.-K. Xing, G.-J. Yang</i>	
Correlations Between the Oscillation Modes of Arc Voltage and Pressure in Cathode Cavity of Dc Plasma Torches.....	474
<i>V. Rat, J.-F. Coudert</i>	
Loading Effect in Plasma Spraying: from In-Flight Particle State Distributions to Diagnostic Reliability.....	480
<i>K. Shinoda, Y. Tan, S. Sampath</i>	
Improving Powder Injection in Plasma Spraying by Optical Diagnostics of the Plasma and Particle Characterization.....	486
<i>G. Mauer, R. Vaßen, D. Stöver, S. Kirner, J.-L. Marqués, S. Zimmermann, G. Forster, J. Schein</i>	
Microstructural Modelling and Performance Simulation of Engineered Bio-Composites	492
<i>U. Tietz, C. C. Berndt, K.-P. Schmitz</i>	
The Improvements of Thermal Spray Toolkit, Extended Software for Robotic Off-Line Programming.....	498
<i>D. Fang, S. Deng, H. Liao, C. Coddet</i>	
Effect of Ambient Pressure and Substrate Temperature on Heat Transfer at Interface Between Molten Droplet and Substrate Surface.....	503
<i>M. Fukumoto, K. Tanaka, K. Yang, T. Usami, T. Yasui, M. Yamada</i>	
Homogenization of Coating Properties in Atmospheric Plasma Spraying – Current Results of a DFG (German Research Foundation)-Funded Research Group.....	509
<i>K. Bobzin, N. Bagcivan, I. Petkovic, J. Schein, K. Landes, G. Forster, K. Hartz-Behrend, S. Kirner, J.-L. Marqués, S. Zimmermann, Fr.-W. Bach, K. Möhwald, J. Prehm, L. Xin</i>	
Improved Mechanical Properties of Coatings and Bulk Components as a Function of Grain Size.....	515
<i>C. Melnyk, S. Schroeder, D. Grant, R. Gansert, M. Watson</i>	
Effect of Stand-Off Distance on EMAA Splats Deposited onto Glass and Mild Steel Substrates	520
<i>W. Xie, S. Saber-Samandari, M. F. Morks, K. Alamara, J. Wang, C. Berndt</i>	
Effect of the Ceramic Component on Cold Sprayed Metal Ceramic Coatings.....	524
<i>A. Sova, V. Kosarev, A. Papyrin, I. Smurov</i>	
Investigation of Impact Behavior of Cold-Sprayed Large Annealed Copper Particles and Characterizations of Coatings.....	529
<i>W.-Y. Li, X. P. Guo, H. L. Liao, C. Coddet</i>	

Characterization and Performance Evaluation of a Helium Recovery System Designed for Cold Spraying	536
<i>J.-G. Legoux, E. Irissou, S. Desaulniers, J. Bobyn, B. Harvey, W. Wong, E. Gagnon, S. Yue</i>	
Mechanical Properties and Behaviour of BSAS/Mullite-Based Environmental Barrier Coatings Exposed to High Temperature in Water Vapour Environment	542
<i>C. V. Cojocaru, S. E. Kruger, R. S. Lima, C. Moreau</i>	
Ti-Parts for Aviation Industry Produced by Cold Spraying	548
<i>K. Binder, F. Gärtner, T. Klassen</i>	
High Temperature Mechanical Behaviour of UHTC Coatings for Thermal Protection of Re-Entry Vehicles.....	554
<i>G. Pulci, M. Tului, J. Tirillò, F. Marra, J. Lionetti, T. Valente</i>	
Near-Net-Shape HVOF Coating and Finishing Techniques for Highly Stressed Components in Aircraft Industry	560
<i>G. Matthäus, J. Wolf, D. Ackermann</i>	
Influence of the Surface State on the Adherence of the Coating: Case of an Alumina Coating Plasma Sprayed on SiC Composites.....	563
<i>S. Costil, S. Lukat, C. Verdy, C. Coddet</i>	
Arc Spraying of WC-FeCSiMn Cored Wires – Part 1: Bending, Compression and Tension Behavior	568
<i>J. Nebel, E. Vogli, W. Tillmann</i>	
A Comparative Study of the Splat Morphology and the Splat-Substrate Interaction for NiCr Sprayed onto Stainless Steel by Both Plasma and HVOF Spraying.....	577
<i>S. Brossard, P. R. Munroe</i>	
Observation of Microstructures in Thermal Sprayed Coatings and Single Deposited Splats Using Ion Beam Milling	583
<i>K. H. Kim, M. Watanabe, S. Kuroda, N. Kawano</i>	
Functionally Graded Coatings Produced by Means of Twin Wire Arc Spraying.....	589
<i>W. Tillmann, E. Vogli, M. Abdulgader</i>	
Effects of Fluid/Solid Couplings on the Plasma Flow Inside a Direct Current Plasma Gun.....	595
<i>R. Bolot, C. Coddet, A. Allimant, D. Billières</i>	
Effect of Using Liquid Feedstock in a High Pressure Cold Spray Nozzle	601
<i>E. Farvardin, O. Stier, V. Luthen, A. Dolatabadi</i>	
Metastable Austenite Type Core Wire for Arc Spraying – Modeling of Heat Transfer in End Face and Coating Structure Analysis	607
<i>Yu. Korobov, M. Filippov, A. Belozertsev, S. Neveszin, V. Shymiakov</i>	
Predicting the Thermal Conductivity of AlSi/Polyester Abradable Coatings: Effects of the Numerical Method.....	612
<i>R. Bolot, J. L. Seichepine, J. H. Qiao, C. Coddet</i>	
In Situ Observation of Impact Phenomena of Zirconia Molten Drops in Millimeter Scale Via Aerodynamic Levitator.....	618
<i>K. Shinoda, K. Nagashio, H. Murakami, S. Kuroda, K. Kuribayashi</i>	

Assessment of Flame-Sprayed Glaze Layers as Diffusion Barriers on Refractory Materials	624
<i>O. Preziosa, A. Denoirjean, G. Montavon, P. Denoirjean, P. Fauchais, T. Chartier, C. Barthhelemy, V. Laurent, D. Lombard</i>	
Phase Composition and Microstructural Responses of Crystalline Mullite/YSZ Coating Under Water Vapor Environments	630
<i>E. Garcia, J. Mesquita-Guimarães, P. Miranz, M. I. Osendi, C. V. Cojocar, Y. Wang, C. Moreau, R. S. Lima</i>	
Corrosion of Ti Coating Prepared by Modified HVOF Process	634
<i>C. M. Deng, C. G. Deng, M. Liu, J. Huang, K. S. Zhou, Z. K. Chen, A. Wank, A. Schwenk</i>	
Corrosion Behavior of NiCrBSi Alloy Coatings Manufactured Via in Situ Plasma Spray – Laser Re-Melting Process	638
<i>N. Serres, F. Hlawka, S. Costil, C. Langlade, F. Machi</i>	
Tribological Analysis of WC Cermet Coatings with Friction Test Under Tensile Stress Condition	644
<i>K. Nomakuchi, F. Itoigawa, J. Kitamura, K. Sato</i>	
Experimental Investigation of Fretting Wear on Nitrided and Thermal Spray Coated Ti-6-4 Parts for Lift Fan Applications	650
<i>P. Patil, F. Sadeghi, S. Dixit, R. Dixit, M. Chin</i>	
TBC Dry Ice Stripping	655
<i>C. Giolli, B. Allegrini, T. Duda, L. Engl, A. Giorgetti, A. Groppetti, L. Lanzi, S. Pini, M. Spagnoli, A. Scrivani</i>	
Thermal Cycle Resistance of Oxidation-Resistant Metallic Coatings	660
<i>S. Takahashi, M. Hatano, Y. Kojima, Y. Harada, A. Kawasaki, F. Ono</i>	
Next Generation Thermal Barrier Coatings for the Gas Turbine Industry	666
<i>N. Curry, N. Markocsan, X.-H. Li, A. Tricoire, M. Dorfman</i>	
Influence of Pores and Cracks Morphology on Mechanical Behavior of Thermally Sprayed Ceramics	673
<i>R. Mušálek, J. Matijčèk, V. Pejchal, E. Mari, A. Valarezo, S. Sampath</i>	
Feasibility of Polycarbonate Coatings by Cold Spray Process	679
<i>D. Seo, N. Mahiou, K. Ogawa, T. Shoji, K. Ito, I. Tirtom</i>	
Microstructures and Adhesive Bonding Strength Analysis of Plasma Sprayed Silica Modified Hydroxyapatite Coatings on Ti-6Al-4V Substrates	686
<i>J. L. Xu, K. A. Khor, J. Cizek</i>	
Design of Experiment Analysis of the Sulzer Metco DJ High Velocity Oxy-Fuel Coating of Hydroxyapatite for Orthopaedic Applications	690
<i>S. Hasan, J. Stokes</i>	
Mechanical Behaviour of Air-Plasma Sprayed Functionally Graded YSZ-Mullite Environmental Barrier Coatings: A Study Via Instrumented Indentation	695
<i>C. V. Cojocar, Y. Wang, R. S. Lima, C. Moreau, J. Mesquita-Guimarães, E. Garcia, P. Miranzo, M. I. Osendi</i>	
Research of Plasma Spraying Process of Nanostructured Zirconia Thermal Barrier Coating	701
<i>H. Sun, C. Wang, X. Liu, Z. Qu, J. Bi</i>	

Effect of Temperature on Wear Characteristic of Cast Iron	706
<i>S. K. Shaha, M. M. Haque, S. Dyuti</i>	
Microstructure and Electrochemical Behavior of Fe-Based Amorphous Metallic Coatings Fabricated by Atmospheric Plasma Spraying	710
<i>Z. Zhou, L. Wang, D. He, F. Wang, Y. Liu</i>	
Analysis of Fe-Base Materials and Evaluation of Their Suitability for Wear Protection Coatings.....	716
<i>A. Pelz</i>	
Comparative Analysis of Anti-Cavitation and Abrasion Resistance Properties of Two Different Detonation Coatings	723
<i>K.-F Huang, J.-P. Fang, S.-H. Wu, B. Xu, L. Ye, Z.-K. Liu</i>	
Degradation Mechanisms of Thermally Sprayed Coatings in Chloride Containing Electrolytes.....	727
<i>J. Laurila, K. Niemi, P. Vuoristo</i>	
Effects of WC Particle Size on Deposition of Cold Spray WC-Co Coatings.....	733
<i>C. C. Berndt, S. M. Ang, P. Cheang, J. Wang</i>	
Modeling of Particle Consolidation by Cold Spray.....	739
<i>J. Kocimski, R. Gr. Maev, V. Leshchynsky, J. Kocimski, A. Ambroziak</i>	
Effect of Powder Preheating Temperature on the Properties of Cu-Based Amorphous Coating Layer by Cold Spray Deposition	745
<i>J. Cho, D. Park, J. Kim, J. Lee, K. Lee</i>	
Location of the Powder Injection as Independent Parameter to Control Particle Velocity and Temperature in Cold Spray	751
<i>A. Sova, V. Kosarev, S. Klinkov, I. Smurov</i>	
Oxide Ion Conductivity in Dense Apatite-Type Lanthanum Silicate	756
<i>W. Gao, H.-L. Liao, C. Coddet</i>	
Computer-Aided Cooling Curve Used to Predict the Solidification Behavior of Cast Iron	762
<i>S. K. Shaha, M. M. Haque</i>	
Characteristics of Cu Film-Like Coating Deposited Using VLPPS	767
<i>N. Zhang, F. Sun, L. Zhu, C. Verdy, M. P. Planche, H. Liao, C. Coddet</i>	
The Bonding Mechanism of WC-12Co Coatings Prepared by Supersonic Plasma Spraying	773
<i>H. Yang, S. Pan</i>	
Effect of Nitrogen Flow Rate on the Microstructure and Transformation Rate of TiN Coatings in Reactive Plasma Spraying	777
<i>H. Yang, H. Chen</i>	
The Role of Parameters on the Hardness of HVOF Sprayed Bond Coats in Thermal Barrier Coatings.....	781
<i>M. Minisker, T. Bengi, E. Ciftiyurek, O. Keles, I. Y. Taptik</i>	
The PROTAL [®] Process Applied on Cold Spraying to Improve Interface Adherence and Coating Cohesion—Case of Titanium and Nickel Based Alloys.....	786
<i>S. Costil, E. Irissou, Y. Danlos, J.-G. Legoux, W. Wong, S. Yue, C. Moreau, C. Coddet</i>	
Surface Pretreatments Including Laser Texturing for Thermal Spraying.....	792
<i>A. Lamraoui, C. Langlade, S. Costil, C. Coddet</i>	

Influence of Improved Plasma Gun on the Particle In-Flight Properties of Temperature and Velocity	797
<i>H. Yang, G. Li, L. Wang</i>	
Effects of Radial Liquid Injection on Atmospheric Plasma Characteristics.....	800
<i>D. Soysal, T. Kavka, A. Ansar</i>	
The Oxy-Fuel Ionization (OFI) Process – Experimental Process Analysis.....	807
<i>M. Parco, G. Barykin, I. Fagoaga, G. Mariaux, S. Goutier, M. Vardelle</i>	
Comparison of the Structure and Wear Properties of Babbitt Layers Produced by Arc Spraying and by Pouring	813
<i>Yu. Korobov, B. Potechin, L. Gogolev, V. Ilushin, M. Deviatiarov</i>	
Characterization of Some Electric Arc Sprayed Cored-Wire and Nano Cored-Wire Cermet Coatings.....	816
<i>M. Tuiprae, S. Wirojanupatump, S. Jiansirisomboon</i>	
Arc Spraying of WC-FeCSiMn Cored Wires – Part 2: Young's Modulus Measurement and Simulation	822
<i>J. Nebel, B. Klusemann, E. Vogli, W. Tillmann, B. Svendsen</i>	
Effect of Powder Compressive Strength on Deposition Characteristics in Cold Spraying	830
<i>T. Sonoda, T. Kuwashima, M. Nakamura, T. Saito</i>	
Addition of hBN to NiAl Coatings Deposited Using APS and HVOF Thermal Spraying.....	835
<i>W. T. Hsiao, C. Y. Su, T. S. Huang, W. H. Liao, M. S. Leu</i>	
Preparation Process and Property Research of FeCrAl Intermetallic Compound Coating.....	841
<i>C. Wang, H. Sun, X. Liu, Z. Qu, J. Bi</i>	
Plasma Sprayed Electrolyte of Magnesium Doped Lanthanum Silicate with Apatite-Type Structure.....	845
<i>F. Sun, H. Liao, N. Zhang, O. Rapaud, C. Coddet</i>	
Preparation of Nanocomposite GDC/LSCF Cathode Material for IT-SOFC by RF Induction Plasma Spraying	849
<i>Y. Shen, F. Gitzhofer, V. Almeida</i>	
Microstructure and Electrochemical Behavior of $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$ Deposited by Solution Precursor Plasma Spraying	855
<i>X.-M. Wang, C.-X. Li, C.-J. Li, L.-H. Tian, B. Song, G.-J. Yang</i>	
Effect of Carbide Type on the Properties of Low Vacuum Plasma Sprayed W-Based Composite Coating Layer.....	860
<i>K.-A. Lee, Y.-M. Jin, J.-H. Ahn</i>	

Author Index