Functionalizing Surface Electrical Potential of Hydroxyapatite Coatings

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Materials Science, Research group: Surface Engineering, Riga Technical University, University of Adelaide
Authors: Pluduma, L., Freimanis, E., Gross, K., Koivuluoto, H., Algate, K., Haynes, D., Vuoristo, P.
Number of pages: 6
Pages: 12-17
Publication date: 2016

Host publication information
Title of host publication: 11th International Conference Medical Applications of Novel Biomaterials and Nanotechnology
Volume: 102
ISBN (Print): 978-3-0357-1125-7

Publication series
Name: Advances in Science and Technology
Volume: 102
ISSN (Print): 1661-819X

Bibliographical note
JUFOID=75599
Research output: Scientific - peer-review › Conference contribution

Towards material excellence: Evaluation of Tekes' programmes on materials

General information
State: Published
Ministry of Education publication type: D4 Published development or research report or study
Organisations: Department of Materials Science, Research group: Plastics and Elastomer Technology, Virebit Oy
Authors: Timonen, J., Antikainen, M., Das, A., Sarlin, E., Vuorinen, J.
Number of pages: 61
Publication date: 2016

Publication information
Publisher: Tekes
Original language: English
Links:
http://www.tekes.fi/tekes/julkaisut1/towards-material-excellence--42016/
Research output: Professional › Commissioned report

Thermal flow permeametry - A rapid method for finding local changes in flow channels
Solid bodies with flow channels can have very heterogeneous structure, whose local variations are difficult to analyze. Yet, this can play an important role affecting characteristics, such as, fluid flow property, strength and heat conductivity. This article presents a method named thermal flow permeametry (TFP) that is applicable for a quick analysis of variations in flow channels, even in meter-sized structures. For illustrating the method, we analyzed the local permeability levels of a large and extremely complex fiber structure. In TFP, hot air is ejected through a structure, while thermal camera measures local surface temperature variations during heating. Gray values of the thermal image are then plotted versus the structures local thickness, density and permeability. We showed that gray values link with local permeability, affected by thickness, density and flow channel tortuousness. We also found out that TFP is very sensitive to local changes in flow channels.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Research group: Ceramic materials, Engineering materials science and solutions (EMASS), Tampere University of Technology
Authors: Järveläinen, M., Keskinen, L., Heinonen, S., Kaleva, A., Levänen, E.
Keywords: (B. Anisotropy, B. Physical properties, B. Porosity, D. Non-destructive testing)
Number of pages: 8
Pages: 138-145
Publication date: 1 Dec 2015
Publication information
Journal: Composites part a: applied science and manufacturing
Volume: 79
ISSN (Print): 1359-835X
Ratings:
Publication Forum (2017): 2
Scopus rating (2016): 1.402 2.053
Publication Forum (2016): 2
Scopus rating (2015): 1.53 2.18
Web of Science (2015): 3.719 4.213 7.4 0.831 0.01725 0.965
Publication Forum (2015): 2
Scopus rating (2014): 1.67 2.538
Web of Science (2014): 3.071 4.045 7.1 0.617 0.0183 0.995
Publication Forum (2014): 2
Scopus rating (2013): 1.59 2.828
Publication Forum (2013): 2
Scopus rating (2012): 1.559 2.706
Publication Forum (2012): 2
Scopus rating (2011): 1.443 2.499
Scopus rating (2010): 1.553 2.241
Scopus rating (2009): 1.536 1.976
Scopus rating (2008): 1.388 1.853
Scopus rating (2007): 1.222 2.188
Scopus rating (2006): 1.208 2.268
Scopus rating (2005): 1.109 2.103
Scopus rating (2004): 1.159 1.671
Scopus rating (2003): 1.132 1.411
Scopus rating (2002): 1.308 1.512
Scopus rating (2001): 1.426 1.33
Scopus rating (2000): 1.273 1.298
Scopus rating (1999): 0.824 1.104
Original language: English
DOIs:
10.1016/j.compositesa.2015.09.013

Bibliographical note
AUX=mol,"Kaleva, Aaretti"
Source: Scopus
Source-ID: 8494309355
Research output: Scientific - peer-review › Article

Suomen keraaminen seura - Keramiska sällskapet | Finland
An Article about the history and present state of the Finnish ceramic society

General information
State: Published
Ministry of Education publication type: D1 Article in a trade journal
Organisations: Department of Materials Science, Research group: Ceramic materials
Authors: Frankberg, E. J.
Keywords: (Ceramic, society, Finland)
Number of pages: 1
Pages: 58-58
Publication date: Oct 2015
Peer-reviewed: Unknown

Publication information
Mechanical characterization of fiber ceramics: Effect of temperature
Fibrous ceramic structures are used in thermal insulators and filters in high-temperature processes. Their mechanical properties are surprisingly complex, being governed by force fields transmitting in the net of fibers. Examining how the fibers link to each other sheds light to this quandary. Extent of linking is defined by the fiber free length (deep red), which is the distance between the closest contact points (green) of a fiber. Decrease of free length, as neighboring fibers (blue) develop contacts, explains why these structures turn rigid with heat. When analyzed with grit blasting, this can be used to discover the structure's thermal history.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Research group: Ceramic materials, Research group: Applied Material Science, Engineering materials science and solutions (EMASS)
Authors: Järveläinen, M., Humalamäki, J., Laakso, J., Levänen, E.
Number of pages: 10
Pages: 821-830
Publication date: 1 Jun 2015
Peer-reviewed: Yes
ASJC Scopus subject areas: Materials Science(all), Condensed Matter Physics

Publication information
Journal: Advanced Engineering Materials
Volume: 17
Issue number: 6
ISSN (Print): 1438-1656
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.826 1.083
Publication Forum (2016): 1
Scopus rating (2015): 0.807 1.045
Web of Science (2015): 1.817 1.744 7.8 0.484 0.00806 0.574
Publication Forum (2015): 1
Scopus rating (2014): 0.805 1.089
Web of Science (2014): 1.758 1.703 7.1 0.354 0.00844 0.554
Publication Forum (2014): 2
Scopus rating (2013): 0.733 0.843
Publication Forum (2013): 2
Scopus rating (2012): 0.779 0.959
Publication Forum (2012): 2
Scopus rating (2011): 0.828 1.035
Scopus rating (2010): 1.097 1.14
Scopus rating (2009): 1.283 1.106
Scopus rating (2007): 1.014 1.157
Scopus rating (2006): 1.051 1.386
Scopus rating (2005): 0.875 1.131
Scopus rating (2004): 0.724 0.989
Characterization Of High-Velocity Single Particle Impacts On Thermally Sprayed Ceramic Coatings

High-velocity impact wear may have a significant effect on the lifetime of thermally sprayed coatings in multiple applications, e.g. in process- and aero industries. An experimental impact study was performed on thermally sprayed coatings with a high velocity particle impactor (HVPI) in oblique angles to investigate the damage, failure and deformation of the coating. The impact site was characterized with a profilometer, optical microscopy and SEM. Furthermore, the connection between the microstructural details and impact behaviour were studied to reveal the damage and failure characteristics in a more comprehensive level. Additionally, traditional dry-erosion behaviour with small particles and different angles was compared with the high-velocity single particle impact phenomena. Differences in wear volume and deformation of the impact site and in absorbance of kinetic energy were also studied, focusing on the effect of material properties as well as the impact characteristics.

General information
State: Unpublished
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Materials Science, Research group: Surface Engineering, Research group: Materials Characterization
Authors: Kiilakoski, J., Lindroos, M., Matikainen, V., Apostol, N., Koivuluoto, H., Vuoristo, P.
Publication date: 13 May 2015

Host publication information
Title of host publication: International Thermal Spray Conference & Exposition 2015
ISBN (Print): 978-1-62708-093-4
ASJC Scopus subject areas: Surfaces, Coatings and Films
Links: https://asm.confex.com/asm/itsc15/webprogram/Paper38348.html

Bibliographical note
Conference presentation, unpublished in proceedings.
Research output: Scientific - peer-review › Conference contribution

Binary TiO2/SiO2 nanoparticle coating for controlling the wetting properties of paperboard
We introduce a flame based aerosol method to fabricate thin films consisting of binary TiO2/SiO2 nanoparticles deposited directly from the flame onto the paperboard. Nanocoatings were prepared with Liquid Flame Spray (LFS) in a roll-to-roll process with the line speed of 50 m/min. Surface wetting behavior of nanocoated paperboard was studied for different Ti/Si ratios in the precursor, affecting TiO2/ SiO2 ratio in the coating. Wettability could be adjusted to practically any water contact angle between 10 and 160° by setting the Ti/Si ratio in the liquid precursor. Structure of the two component nanocoating was analysed with FE-SEM, TEM, EDS, XPS and XRD. The porous thin film coating was concluded to consist of ca. 10 nm sized mixed oxide nanoparticles with segregated TiO2 and SiO2 phases. Accumulation of carbonaceous compounds on the surface was seen to be almost linearly dependent on the Ti/Si ratio, indicating of each species being exposed in corresponding amount. However, wetting of the surface was observed to follow merely an S-shaped curve, caused by the roughness of the nanocoated surface. Reasons for the observed superhydrophobicity and superhydrophilicity of these binary nanocoatings on paperboard are discussed. (C) 2014 Elsevier B.V. All rights reserved.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Physics, Research area: Aerosol Physics, Research group: Aerosol Synthesis, Department of Materials Science, Research group: Paper Converting and Packaging, Engineering materials science and solutions (EMASS), Abo Akad Univ, Abo Akademi University, Lab Paper Coating & Converting, Univ Helsinki, University of Helsinki, Dept Chem, Inorgan Chem Lab
Mechanical performance and CO2 uptake of ion-exchanged zeolite A structured by freeze-casting

Zeolite 4A has been freeze-cast into highly porous monoliths with a cylindrical shape. The brittle monoliths, with lamellar or columnar pores and wall thicknesses between 8 and 35μm, show a compressive mechanical response along the main pore axis that could be modeled by a buckling behavior. The failure strength is proportional to the density and the amount of transverse bridging across lamella, which was shown to be related to the pore cross-sectional aspect ratio. Monoliths with highly anisotropic pores with a cross-sectional aspect ratio higher than 3 yielded sequentially from the top surface, whereas monoliths with a pore aspect ratio lower than 3 were found to delaminate into longitudinal splinters. The freeze-cast monoliths show a sharp gas breakthrough front with a 1:9 mixture of CO2 and N2, indicating...
rapid uptake kinetics of the lamellar structures.

**General information**

State: Published

Ministry of Education publication type: A1 Journal article-refereed

Organisations: Department of Materials Science, Research group: Ceramic materials, Department of Signal Processing, Engineering materials science and solutions (EMASS), Workshop for Research in Artistic Technologies, RATS, Stockholm University, Sweden, Luleå University of Technology, Department of Materials and Environmental Chemistry, Berzelii Center EXSELENT on Porous Materials, Division of Materials Science

Authors: Ojuva, A., Järveläinen, M., Bauer, M., Keskinen, L., Valkonen, M., Akhtar, F., Levänen, E., Bergström, L.

Keywords: (Freeze-casting, Laminate, Mechanical strength, Porous ceramics, Zeolite A)

Number of pages: 12

Pages: 2607-2618

Publication date: 2015

Peer-reviewed: Yes

ASJC Scopus subject areas: Ceramics and Composites, Materials Chemistry

**Publication information**

Journal: Journal of the European Ceramic Society

Volume: 35

Issue number: 9

ISSN (Print): 0955-2219

Ratings:

Publication Forum (2017): 2

Scopus rating (2016): 1.135 1.776

Publication Forum (2016): 2

Scopus rating (2015): 1.15 1.841

Web of Science (2015): 2.933 3.01 7.9 0.9 0.02203 0.674

Publication Forum (2015): 2

Scopus rating (2014): 1.187 2.099

Web of Science (2014): 2.947 3.0 7.7 0.688 0.02233 0.672

Publication Forum (2014): 2

Scopus rating (2013): 1.122 1.794

Publication Forum (2013): 2

Scopus rating (2012): 1.305 2.244

Publication Forum (2012): 2

Scopus rating (2011): 1.343 2.217

Scopus rating (2010): 1.392 1.945

Scopus rating (2009): 1.381 1.724

Scopus rating (2008): 1.146 1.645

Scopus rating (2007): 1.22 1.76

Scopus rating (2006): 1.191 1.67

Scopus rating (2005): 1.084 1.637

Scopus rating (2004): 1.037 1.747

Scopus rating (2003): 1.129 1.497

Scopus rating (2002): 1.04 1.181

Scopus rating (2001): 1.238 1.597

Scopus rating (2000): 0.99 1.182

Scopus rating (1999): 1.141 1.156

Original language: English

DOIs:

10.1016/j.jeurceramsoc.2015.03.001

**Bibliographical note**

ORG=mol,0.5

ORG=sgn,0.5

Source: Scopus

Source-ID: 84933679506

Research output: Scientific - peer-review › Article
Versatile erosion wear testing with the high speed slurry-pot

The high speed slurry-pot tester was developed for application oriented erosion wear testing of materials used in mineral handling and processing. It enables tests in demanding high stress abrasive and erosive environments simulating wear, for example in slurry pumps, tanks and pipes, mineral crushing and grinding, loader buckets, dredging, and drilling. The key design features of the test method are the possibility to use up to 10 millimeter sized particles and sample speeds up to 20 m/s in conditions ranging from wet slurry environments to dry sand or gravel.

The tester has been used to test many different material types, including conventional steels, surface treated steels, cast irons, thick and thin coatings, ceramics, hybrid materials, polymers and elastomers. With the high speed slurry-pot tester, samples of various types and sizes can be tested.

In the FIMECC BSA/P2/SP3 project, the focus is in the testing of materials intended for demanding wear related applications. Moreover, the test system is further developed for various wear conditions, including slurry-erosion, grinding abrasion, and sub-zero temperatures.
knowledge of materials, the feasibility of development ideas and in searching of new R&D opportunities. The nature of university based research inputs was typically fast and short-termed. Some innovation processes ended up as new products or product improvements. New knowledge, information and knowledge networks were created. The advisory professorship model can be considered a useful practice-based innovation tool for regional university–industry cooperation with some limitations. In the thesis the materials technology related regional resources, infrastructure and needs from both private and public sectors are also studied and levels of regional availability, access and delivery options for materials technological research are analysed in the Lahti region. Based on this information, it is suggested how the knowledge, network and innovation system related to materials technology should be developed further by public policies and strategies in the region.

General information
State: Published
Ministry of Education publication type: G4 Doctoral dissertation (monograph)
Organisations: Department of Materials Science
Authors: Eerola, S.
Number of pages: 208
Publication date: 6 Jun 2014

Publication information
Place of publication: Tampere
Publisher: Tampere University of Technology
Original language: English

Publication series
Name: Tampere University of Technology. Publication
Publisher: Tampere University of Technology
No.: 1216
ISSN (Print): 1459-2045
Electronic versions:
eerola.pdf
Links:

Bibliographical note
Awarding institution:Tampere University of Technology
Source: researchoutputwizard
Source-ID: 274
Research output: Monograph › Doctoral Thesis

Switchable water absorption of paper via liquid flame spray nanoparticle coating
Surface wetting/anti-wetting and liquid absorption are relevant properties of many porous solids including paper and other cellulose-based materials. Here we demonstrate how surface wetting by water and water absorption of commercially available kraft paper can be altered by thin nanoparticle coatings fabricated by liquid flame spray in facile and continuous one-step process. Surface wettability and absorption properties of paper increased with silica and decreased with titania (TiO2) nanoparticle coatings. Moreover, the water-repellent (superhydrophobic) TiO2 nanoparticle coated paper could be switched to superhydrophilic and water absorbing by ultraviolet illumination. The experiments revealed that although surface wetting and liquid absorption of nanoparticle coated paper are strongly related to each other, they are two distinct phenomena which do not necessarily correlate. We propose wetting regimes on the nanoparticle coated paper samples on the basis of the experimental observations.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Research group: Paper Converting and Packaging, Department of Physics, Research area: Aerosol Physics, Research group: Aerosol Synthesis, Engineering materials science and solutions (EMASS), Abo Akad Univ, Abo Akademi University, Ctr Funct Mat, Lab Paper Coating & Converting
Authors: Teisala, H., Tuominen, M., Haapanen, J., Aromaa, M., Stepien, M., Mäkelä, J. M., Saarinen, J. J., Toivakka, M., Kuusipalo, J.
Number of pages: 11
Pages: 2033-2043
Publication date: Jun 2014
Peer-reviewed: Yes

Publication information
Abrasion, Erosion and Cavitation Erosion Wear Properties of Thermally Sprayed Alumina Based Coatings

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science
Authors: Matikainen, V., Niemi, K., Koivuluoto, H., Vuoristo, P.
Number of pages: 19
Pages: 18-36
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Coatings
Volume: 4
Issue number: 1
ISSN (Print): 2079-6412
Abstracts of the 28th International Conference on Surface Modification Technologies, SMT28, Tampere University of Technology, Tampere, Finland, June 16-18, 2014

General information
State: Published
Ministry of Education publication type: C2 Edited books
Organisations: Department of Materials Science
Number of pages: 150
Publication date: 2014

Publication information
Place of publication: Tampere
Publisher: Tampere University of Technology
Original language: English

Bibliographical note
Contribution: organisation=mol,FACT1=1
Portfolio EDEND: 2014-12-01
Publisher name: M D P I AG
Source: researchoutputwizard
Source-ID: 1051
Research output: Scientific - peer-review › Article

Adjustable wetting of Liquid Flame Spray (LFS) TiO2-nanoparticle coated board: Batch-type versus roll-to-roll Stimulation methods

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Department of Physics, Engineering materials science and solutions (EMASS)
Authors: Tuominen, M., Teisala, H., Haapanen, J., Aromaa, M., Mäkelä, J. M., Stepien, M., Saarinen, J. J., Toivakka, M., Kuusipalo, J.
Number of pages: 9
Pages: 271-279
Publication date: 2014
Peer-reviewed: Yes

Publication information
Volume: 29
Issue number: 2
ISSN (Print): 0283-2631
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.385 0.652
Publication Forum (2016): 1
Scopus rating (2015): 0.375 0.787
Web of Science (2015): 1.062 0.918 8.8 0.457 0.00134 0.235
Publication Forum (2015): 1
Scopus rating (2014): 0.444 0.823
Web of Science (2014): 1.016 0.927 8.4 0.775 0.00126 0.224
Publication Forum (2014): 1
Scopus rating (2013): 0.389 0.684
Publication Forum (2013): 1
Scopus rating (2012): 0.628 1.281
Publication Forum (2012): 1
Scopus rating (2011): 0.582 0.902
Scopus rating (2010): 0.658 0.764
Scopus rating (2009): 1.167 0.984
Scopus rating (2008): 0.928 0.857
Scopus rating (2007): 2.018 1.035
Scopus rating (2006): 1.002 0.951
Scopus rating (2005): 1.181 0.997
Scopus rating (2004): 2.08 1.354
Scopus rating (2003): 2.952 1.129
Scopus rating (2002): 1.836 1.145
Scopus rating (2001): 1.12 1.147
Scopus rating (2000): 1.086 1.154
Scopus rating (1999): 1.086 1.001
Original language: English
DOIs: 10.3183/NPPRJ-2014-29-02-p271-279

Bibliographical note
Contribution: organisation=mol,FACT1=0.5<br/>Contribution: organisation=fys,FACT2=0.5<br/>Portfolio EDEND: 2014-08-04<br/>Publisher name: Svenska Pappers- och Cellulosaingenioersfoereningen
Source: researchoutputwizard
Source-ID: 1655
Research output: Scientific - peer-review › Article

Antibacterial properties and chemical stability of superhydrophobic silver-containing surface produced by sol-gel route

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Engineering materials science and solutions (EMASS)
Authors: Heinonen, S., Huttunen-Saarivirta, E., Nikkanen, J., Raulio, M., Priha, O., Laakso, J., Strogårds, E., Levänen, E.
Number of pages: 13
Pages: 149-161
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Colloids and Surfaces A: Physicochemical and Engineering Aspects
Volume: 453
ISSN (Print): 0927-7757
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.797 1.104
Publication Forum (2016): 1
Scopus rating (2015): 0.803 1.116
Web of Science (2015): 2.76 2.834 7.5 0.581 0.02955 0.592
Publication Forum (2015): 1
Scopus rating (2014): 0.843 1.252
Applications of supercritical carbon dioxide in materials processing and synthesis

General information
State: Published
Ministry of Education publication type: A2 Review article in a scientific journal
Organisations: Department of Materials Science, Engineering materials science and solutions (EMASS)
Authors: Zhang, X., Heinonen, S., Levänen, E.
Number of pages: 17
Pages: 1-16
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: RSC Advances
Issue number: xx
ISSN (Print): 2046-2069
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.875 0.743
Publication Forum (2016): 1
Scopus rating (2015): 0.959 0.837
Web of Science (2015): 3.289 3.485 1.8 0.676 0.13014 0.628
Publication Forum (2015): 1
Scopus rating (2014): 1.114 0.965
Web of Science (2014): 3.84 3.907 1.7 0.597 0.0623 0.747
Publication Forum (2014): 1
Scopus rating (2013): 1.117 0.903
Publication Forum (2013): 1
Scopus rating (2012): 0.863 0.603
Influence of powder composition and manufacturing method on electrical and chromium barrier properties of atmospheric plasma sprayed spinel coatings prepared from MnCo2O4 and Mn2CoO4 + Co powders on Crofer 22 APU interconnectors

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Optoelectronics Research Centre, Engineering materials science and solutions (EMASS), Frontier Photonics
Number of pages: 12
Pages: 17246-17257
Publication date: 2014
Peer-reviewed: Yes

Publication information
Volume: 39
Issue number: 30
ISSN (Print): 0360-3199
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 1.142 1.286
Publication Forum (2016): 1
Scopus rating (2015): 1.294 1.319
Web of Science (2015): 3.205 3.419 4.6 0.651 0.08996 0.619
Publication Forum (2015): 1
Scopus rating (2014): 1.212 1.494
Web of Science (2014): 3.313 3.659 4.3 0.539 0.08226 0.619
Publication Forum (2014): 3
Scopus rating (2013): 1.278 1.467
Publication Forum (2013): 3
Scopus rating (2012): 1.515 1.729
Publication Forum (2012): 3
Scopus rating (2011): 1.456 1.837
Scopus rating (2010): 1.589 1.871
Scopus rating (2009): 1.333 1.885
Scopus rating (2008): 1.401 2.096
Scopus rating (2007): 1.279 2.201
Scopus rating (2006): 1.073 2.161
Scopus rating (2005): 1.107 1.787
Scopus rating (2004): 1.225 1.626
Scopus rating (2003): 1.003 1.319
Scopus rating (2002): 0.763 1.157
Scopus rating (2001): 0.487 1.185
Scopus rating (2000): 0.518 0.866
Scopus rating (1999): 0.382 0.897
Original language: English
Influence of the powder morphology and plasma play process parameters on the structure and properties of Al2O3 based plasma sprayed coatings

General information
State: Published
Ministry of Education publication type: B3 Non-refereed article in conference proceedings
Organisations: Department of Materials Science
Authors: Matikainen, V., Koivuluoto, H., Vuoristo, P., Larjo, J.
Number of pages: 6
Pages: 130-135
Publication date: 2014

Host publication information
Title of host publication: International Thermal Spray Conference, ITSC2014, 21-23 May, 2014, Barcelona, Spain
ISBN (Print): 978-3-87155-574-9

Publication series
Name: DVS-Berichte
Volume: 302
ISSN (Print): 1341-3074

Multifunctional superhydrophobic nanoparticle coatings for cellulosebased substrates by liquid flame spray

General information
State: Published
Ministry of Education publication type: D1 Article in a trade journal
Organisations: Department of Materials Science
Authors: Teisala, H.
Number of pages: 1
Pages: 59
Publication date: 2014
Peer-reviewed: Unknown

Publication information
Journal: Materia
Issue number: 1
ISSN (Print): 1459-9694
Ratings:
Publication Forum (2017): 0
Publication Forum (2016): 0
Publication Forum (2015): 0
Original language: Finnish
Links:
http://www.vuorimiesyhdistys.fi/sites/default/files/materia/pdf/Materia%201-2014_0.pdf

Bibliographical note
Contribution: organisation=mol,FACT1=1
Portfolio EDEND: 2014-12-16
Source: researchoutputwizard
Source-ID: 1050
Research output: Scientific › Conference contribution
Nanoparticle Deposition on Packaging Materials by Liquid Flame Spray: Generation of Superhydrophilic and Superhydrophobic Coatings

General information
State: Published
Ministry of Education publication type: A3 Part of a book or another research book
Organisations: Department of Materials Science, Department of Physics
Authors: Teisala, H., Tuominen, M., Aromaa, M., Stepien, M., Mäkelä, J. M., Saarinen, J. J., Toivakka, M., Kuusipalo, J.
Number of pages: 13
Pages: 331-343
Publication date: 2014

Host publication information
Title of host publication: Recent Advances in Adhesion Science and Technology
Place of publication: Boca Raton
Publisher: CRC Press
Editors: Gutowski, W. (.), Dodiuk, H.
ISBN (Print): 978-90-04-20173-6

Bibliographical note
Contribution: organisation=mol,FACT1=0.5<br/>Contribution: organisation=fys,FACT2=0.5<br/>Portfolio EDEND: 2014-08-30
Source: researchoutputwizard
Source-ID: 1609
Research output: Scientific - peer-review › Chapter

Paper-based microfluidics: Fabrication technique and dynamics of capillary driven surface flow

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Department of Physics, Engineering materials science and solutions (EMASS)
Authors: Songok, J., Tuominen, M., Teisala, H., Haapanen, J., Mäkelä, J. M., Kuusipalo, J., Toivakka, M.
Number of pages: 7
Pages: 20060-20066
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: ACS Applied Materials and Interfaces
Volume: 6
Issue number: 22
ISSN (Print): 1944-8244
Ratings:
Publication Forum (2017): 2
Scopus rating (2016): 2.524 1.528
Publication Forum (2016): 2
Scopus rating (2015): 2.299 1.568
Web of Science (2015): 7.145 7.332 2.4 1.18 0.1479 1.462
Publication Forum (2015): 2
Scopus rating (2014): 2.126 1.64
Web of Science (2014): 6.723 6.813 2.3 0.991 0.09406 1.373
Publication Forum (2014): 1
Scopus rating (2013): 1.979 1.543
Publication Forum (2013): 1
Scopus rating (2012): 2.18 1.309
Publication Forum (2012): 1
Bibliographical note
Contribution: organisation=mol,FACT1=0.5
Contribution: organisation=fys,FACT2=0.5
Portfolio EDEND: 2014-12-30
Publisher name: American Chemical Society
Source: researchoutputwizard
Source-ID: 1538
Research output: Scientific - peer-review › Article

Post-mortem evaluation of oxidized atmospheric plasma sprayed Mn-Co-Fe oxide spinel coatings on SOFC interconnectors

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Engineering materials science and solutions (EMASS)
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Peer-reviewed: Yes

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Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 1.142 1.286
Publication Forum (2016): 1
Scopus rating (2015): 1.294 1.319
Web of Science (2015): 3.205 3.419 4.6 0.651 0.08996 0.619
Publication Forum (2015): 1
Scopus rating (2014): 1.212 1.494
Web of Science (2014): 3.313 3.659 4.3 0.539 0.08226 0.619
Publication Forum (2014): 3
Scopus rating (2013): 1.278 1.467
Publication Forum (2013): 3
Scopus rating (2012): 1.515 1.729
Publication Forum (2012): 3
Scopus rating (2011): 1.456 1.837
Scopus rating (2010): 1.589 1.871
Scopus rating (2009): 1.333 1.885
Scopus rating (2008): 1.401 2.096
Scopus rating (2007): 1.279 2.201
Scopus rating (2006): 1.073 2.161
Scopus rating (2005): 1.107 1.787
Scopus rating (2004): 1.225 1.626
Scopus rating (2003): 1.003 1.319
Scopus rating (2002): 0.763 1.157
Scopus rating (2001): 0.487 1.185
Scopus rating (2000): 0.518 0.866
Properties of WC-FeCrAl coatings manufactured by different high velocity thermal spray processes

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Engineering materials science and solutions (EMASS)
Authors: Bolelli, G., Hulka, I., Koivuluoto, H., Lusvarghi, L., Milanti, A., Niemi, K., Vuoristo, P.
Number of pages: 16
Pages: 74-89
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Surface and Coatings Technology
Volume: 247
ISSN (Print): 0257-8972
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.874 1.359
Publication Forum (2016): 1
Scopus rating (2015): 0.871 1.415
Web of Science (2015): 2.139 2.417 8.5 0.402 0.0356 0.527
Publication Forum (2015): 1
Scopus rating (2014): 0.998 1.681
Web of Science (2014): 1.998 2.374 8.2 0.307 0.03477 0.517
Publication Forum (2014): 2
Scopus rating (2013): 1.057 1.859
Publication Forum (2013): 2
Scopus rating (2012): 1.049 1.658
Publication Forum (2012): 2
Scopus rating (2011): 1.053 1.851
Scopus rating (2010): 1.155 1.66
Scopus rating (2008): 1.479 1.564
Scopus rating (2007): 1.165 1.509
Scopus rating (2006): 1.276 1.709
Scopus rating (2005): 1.252 1.666
Scopus rating (2004): 1.269 1.498
Scopus rating (2003): 1.276 1.516
Scopus rating (2002): 1.208 1.183
Scopus rating (2001): 1.115 1.181
Scopus rating (2000): 0.981 1.03
Scopus rating (1999): 1.062 1.167
Original language: English
DOIs:
10.1016/j.surfcoat.2014.03.021
Review on Liquid Flame Spray in paper converting: Multifunctional superhydrophobic nanoparticle coatings

Wettability of a solid surface by a liquid plays an important role in several phenomena and applications, for example in adhesion, printing, and coating. Especially, wetting of rough surfaces has attracted a considerable scientific interest in recent decades. Superhydrophobic surfaces, which possess extraordinary water repellency properties due to their low surface energy chemistry and specific nano- and microscale roughness, are of particular interest due to the great variety of potential applications ranging from self-cleaning surfaces to microfluidic devices. Here we examine functional superhydrophobic and superhydrophilic nanoparticle coatings fabricated by liquid flame spray (LFS) on cellulose-based substrate materials. The article is a review of earlier papers with some new results and conclusions added. LFS has proved itself straightforward and versatile one-step method to fabricate broad range of functional nanoparticle coatings on various substrate materials in an atmospheric roll-to-roll process. It has established itself among the most potential candidates for large-scale production of superhydrophobic coatings on affordable cellulose-based substrates.

General information
State: Published
Ministry of Education publication type: A2 Review article in a scientific journal
Organisations: Department of Materials Science, Department of Physics, Research area: Aerosol Physics, Research group: Aerosol Synthesis, Engineering materials science and solutions (EMASS)
Authors: Teisala, H., Tuominen, M., Haapanen, J., Aromaa, M., Stepień, M., Mäkelä, J. M., Saarinen, J. J., Toivakka, M., Kuusipalo, J.
Keywords: (Cellulose, Functional coating, Liquid flame spray, Nanoparticle coating, Review, Superhydrophobic)
Number of pages: 13
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Publication date: 2014
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Publication information
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Issue number: 4
ISSN (Print): 0283-2631
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 0.385 0.652
Publication Forum (2016): 1
Scopus rating (2015): 0.375 0.787
Web of Science (2015): 1.062 0.918 8.8 0.457 0.00134 0.235
Publication Forum (2015): 1
Scopus rating (2014): 0.444 0.623
Web of Science (2014): 1.016 0.927 8.4 0.775 0.00126 0.224
Publication Forum (2014): 1
Scopus rating (2013): 0.389 0.684
Publication Forum (2013): 1
Scopus rating (2012): 0.628 1.281
Publication Forum (2012): 1
Scopus rating (2011): 0.582 0.902
Scopus rating (2010): 0.658 0.764
Scopus rating (2009): 1.167 0.984
Scopus rating (2008): 0.928 0.857
Scopus rating (2007): 2.018 1.035
Scopus rating (2006): 1.002 0.951
Scopus rating (2005): 1.181 0.997
Scopus rating (2004): 2.08 1.354
Scopus rating (2003): 2.952 1.129
Scopus rating (2002): 1.836 1.145
Selective morphologies of MgO via nanoconfinement on y-Al2O3 and reduced graphite oxide (rGO): improved CO2 capture capacity at elevated temperatures

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Engineering materials science and solutions (EMASS)
Authors: Zhang, X., Qui, K., Levänen, E., Guo, X. Z.
Number of pages: 7
Pages: 8825-8831
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: CrystEngComm
Issue number: 16
ISSN (Print): 1466-8033
Ratings:
Publication Forum (2017): 1
Scopus rating (2016): 1.043 0.904
Publication Forum (2016): 1
Scopus rating (2015): 1.063 0.999
Web of Science (2015): 3.849 3.801 3.4 0.928 0.05518 0.67
Publication Forum (2015): 1
Scopus rating (2014): 1.131 1.11
Web of Science (2014): 4.034 4.022 3.0 0.988 0.05187 0.717
Publication Forum (2014): 2
Scopus rating (2013): 1.079 1.11
Publication Forum (2013): 2
Scopus rating (2012): 1.253 1.142
Publication Forum (2012): 2
Scopus rating (2011): 1.174 1.191
Scopus rating (2010): 1.233 1.229
Scopus rating (2009): 1.227 1.257
Scopus rating (2008): 1.297 1.183
Scopus rating (2007): 1.42 1.704
Scopus rating (2005): 1.419 1.051
Scopus rating (2004): 1.0 0.951
Scopus rating (2003): 0.73 0.751
Surface Processing of Zirconia Ceramics by Laser

The aim of this study was to investigate phase transformations and glazing of zirconia bulk ceramic as a function of laser processing parameters. Zirconia-based ceramics have good material properties for a variety of applications. The main advantage of zirconia compared to other structural ceramics, like silicon-based ceramics and alumina, is its high fracture toughness (typically over 10 MPa√m). This property is largely based on partial stabilization of zirconia, where a portion of the material is in metastable phase, enabling instantaneous phase transformation under mechanical load. This consumes energy otherwise provided to crack propagation. The stable phase of zirconia to exist in room temperature is monoclinic; therefore a rapid cycle of heating and cooling is necessary for achieving metastable tetragonal phase. Pulsed laser processing offers just the right type of thermal cycle for the aforementioned phase transformation to occur. In this study a nanosecond pulsed laser was used for surface processing of zirconia ceramic blocks.

During laser processing high energy can be concentrated into small area, causing sudden local heating, which in turn causes material to melt and vaporize instantly. However, heat dissipation remains small due to the short pulse length, leading to the desirable cycle. Temperatures in the process correlate with several parameters: pulse width, peak energy, repetition rate, pulse overlap, material properties and wavelength. Zirconia is a tough material to process in terms of material removal with laser ablation, since it tends to melt rather than evaporate.

Synthesis of carbon nanotubes on FeOx doped Al2O3–ZrO2 nanopowder

General information
State: Published
Organisations: Department of Mechanical Engineering and Industrial Systems, Department of Materials Science,
Research group: Ceramic materials, Research group: Laser, Research area: Manufacturing and Automation, Tampere University of Technology
Authors: Kumpulainen, T., Ismailov, A., Hyvärinen, L., Levänen, E., Vihinen, J.
Keywords: (Laser, Zirconia, Ceramic)
Number of pages: 10
Pages: 275-284
Publication date: 2014

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ORG=mol,0.5
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AUX=orc,"Hyvärinen, L."
Research output: Scientific - peer-review › Conference contribution

Synthesis of carbon nanotubes on FeOx doped Al2O3–ZrO2 nanopowder

General information
State: Published
Organisations: Research area: Aerosol Physics, Department of Materials Science, Department of Physics, Research group: Materials Characterization, Engineering materials science and solutions (EMASS)
Topically applied ZnO nanoparticles suppress allergen induced skin inflammation but induce vigorous IgE production in the atopic dermatitis mouse model

General information
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Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Materials Science, Engineering materials science and solutions (EMASS)
Authors: Ilves, M., Palomäki, J., Vippola, M., Lehto, M., Savolainen, K., Savinko, T., Alenius, H.
Number of pages: 12
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Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Particle and Fibre Toxicology
Volume: 11
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ISSN (Print): 1743-8977
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Publication Forum (2017): 1
Scopus rating (2016): 2.742 2.165
Publication Forum (2016): 1
Scopus rating (2015): 3.0 2.013
Web of Science (2015): 8.649 9.618 4.3 0.312 0.00916 2.41
Publication Forum (2015): 1
Scopus rating (2014): 2.359 1.81
Web of Science (2014): 7.113 9.254 4.2 1.536 0.00753 2.225
Publication Forum (2014): 1
Scopus rating (2013): 2.713 2.388
Publication Forum (2013): 1
Scopus rating (2012): 3.032 2.075
Publication Forum (2012): 1
Scopus rating (2011): 2.705 1.887
Scopus rating (2010): 2.102 1.385
Scopus rating (2009): 2.138 1.743
Scopus rating (2008): 2.152 1.82
Scopus rating (2007): 1.781 1.734
Scopus rating (2006): 1.47 1.707
Scopus rating (2005): 0.499 0.298
Original language: English
DOIs: 10.1186/s12989-014-0038-4
Links:
http://www.particleandfibretoxicology.com/content/11/1/38

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