Proceedings of the 2nd Annual SMACC Research Seminar 2017

The Annual SMACC Research Seminar is a forum for researchers from VTT Technical Research Centre of Finland Ltd, Tampere University of Technology (TUT) and industry to present their research in the area of smart machines and manufacturing. The 2nd seminar is held in 7th of November 2017 in Tampere, Finland.

The objective of the seminar is to publish results of the research to wider audiences and to offer researchers a forum to discuss their research and to find common research interests and new research ideas.

Smart Machines and Manufacturing Competence Centre - SMACC is joint strategic alliance of VTT Ltd and TUT in the area of intelligent machines and manufacturing. SMACC offers unique services for SME’s in the field of machinery and manufacturing - key features are rapid solutions, cutting-edge research expertise and extensive partnership networks. SMACC is promoting digitalization in mechanical engineering and making scientific research with domestic and international partners in several different topics (www.smacc.fi).

General information
State: Published
Ministry of Education publication type: C2 Edited books
Organisations: Mechanical Engineering and Industrial Systems
Authors: Aaltonen, J., Koskinen, K., Virkkunen, R., Kuivanen, R.
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High speed, high strength microwelding of Si/glass using ps-laser pulses

A novel microwelding procedure to join Si-to-glass using pulser pulses with high repetition rates is presented. The procedure provides weld joint with mechanical strength as high as 85 MPa and 45 MPa in sample pairs of Si/alumino-silicate (Si/SW-Y) and Si/borosilicate (Si/Borofloat 33), respectively, which are higher than anodic bonding, at high spatial resolution (< 20 μm) and very high throughput without pre- and post-heating. Laser-matter interaction analysis indicates that excellent weld joint of Si/glass is obtained by avoiding violent evaporation of Si substrate using ps-laser pulses. Laser welded Si/glass samples can be singulated along the weld lines by standard blade dicer without defects, demonstrating welding by ps-laser pulses is applicable to wafer-level packaging.

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Manufacturing and Automation, Osaka University, Erlangen Graduate School of Advanced Optical Technologies (SAOT), Okayama University, Corelase, Ltd.
Authors: Miyamoto, I., Okamoto, Y., Hansen, A., Vihinen, J., Amberla, T., Kangastupa, J.
Number of pages: 13
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Publication information
Journal: Optics Express
Volume: 23
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ISSN (Print): 1094-4087
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Scopus rating (2016): CiteScore 3.48 SJR 1.487 SNIP 1.589
Scopus rating (2015): SJR 1.976 SNIP 1.755 CiteScore 3.78
Scopus rating (2014): SJR 2.349 SNIP 2.166 CiteScore 4.18
Scopus rating (2013): SJR 2.358 SNIP 2.226 CiteScore 4.38
Scopus rating (2012): SJR 2.587 SNIP 2.145 CiteScore 3.85
Analysis of the aircraft operational reliability research series: From statistical models to avionics data monitoring

General information
State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mechanical Engineering and Industrial Systems, Research group: Käyttövarmuuden suunnittelu ja kunnossapito
Authors: Laitinen, J., Niemi, A.
Number of pages: 15
Publication date: 2015

Host publication information
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Bibliographical note
siirretään 2015<br/>Contribution: organisation=mei,FACT1=1<br/>Portfolio EDEND: 2015-01-14<br/>publication_forum:73368
Source: researchoutputwizard
Source-ID: 19
Research output: Scientific - peer-review › Article

Effect of heat transfer on glass quality in tempering

General information
State: Published
Ministry of Education publication type: B3 Non-refereed article in conference proceedings
Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics, Research group: Lämpö- ja virtaustekniikka
Authors: Karvinen, R., Mikkonen, A.
Publication date: 2015

Host publication information
Title of host publication: GPD Glass Performance Days Finland 2015 : Conference Proceedings
ISBN (Print): 9789525836035

Bibliographical note
Hydraulic Cylinder Models for Flexible Multibody System Simulation

General information
State: Published
Ministry of Education publication type: G4 Doctoral dissertation (monograph)
Organisations: Department of Mechanical Engineering and Industrial Systems, Research group: Teknillinen mekaniikka ja lujuusoppi
Authors: Ylinen, A.
Number of pages: 136
Publication date: 2015

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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
Volume: 1302
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Awarding institution: Tampere University of Technology
Research output: Monograph › Doctoral Thesis

CFD based on-line process analysis - applied to circulating and bubbling fluidized bed processes

General information
State: Published
Ministry of Education publication type: D4 Published development or research report or study
Organisations: Department of Mechanical Engineering and Industrial Systems
Number of pages: 43
Publication date: 2014

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Place of publication: Espoo
Publisher: VTT
Original language: English

Publication series
Name: Research report VTT-R
Publisher: VTT
No.: 04576-14

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Contribution: organisation=mei,FACT1=1<br/>Portfolio EDEND: 2014-12-13
Source: researchoutputwizard
Source-ID: 640
Research output: Professional › Commissioned report

High Performance Particle Tracking Velocimetry for Fluidized Beds

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Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mechanical Engineering and Industrial Systems
Image based measurement techniques for particulate flows

General information
State: Published
Ministry of Education publication type: G5 Doctoral dissertation (article)
Organisations: Department of Mechanical Engineering and Industrial Systems
Authors: Kolehmainen, J.
Number of pages: 98
Publication date: 2014

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Original language: English

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Awarding institution: Tampere University of Technology
Source: researchoutputwizard
Source-ID: 743
Research output: Collection of articles › Doctoral Thesis

Interference-based overlapping particle tracking velocimetry for fluidized beds

General information
State: Published
Ministry of Education publication type: A1 Journal article-refereed
Organisations: Department of Mechanical Engineering and Industrial Systems
Authors: Kolehmainen, J., Elfvengren, J., Saarenrinne, P.
Number of pages: 15
Pages: 1-15
Publication date: 2014
Peer-reviewed: Yes

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Journal: Experiments in Fluids
Volume: 55
PTV and PIV based dispersed phase velocity measurements in a pseudo-2D turbulent fluidized bed

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State: Published
Ministry of Education publication type: A4 Article in a conference publication
Organisations: Department of Mechanical Engineering and Industrial Systems
Authors: Kolehmainen, J., Elfvengren, J., Ylönen, M., Saarenrinne, P., Kallio, S., Peltola, J.
Number of pages: 9
Pages: 1-9
Publication date: 2014

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