

Institute of Physics Publishing

Third International Conference on Optical and Laser Diagnostics

ICOLAD 2007

Journal of Physics: Conference Series Vol. 85

May 22-25, 2007
London, UK

Printed from e-media with permission by:

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

ISBN: 978-1-60560-258-5

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

Copyright (2007) by the Institute of Physics Publishing.

All rights reserved.

For permission requests, please contact the Institute of Physics Publishing at the address below.

Institute of Physics Publishing
Dirac House, Temple Back
Bristol BS1 6BE UK

Tel +44 (0)117 929 7481
Fax +44 (0)117 929 4318

Institute of Physics Publishing

Third International Conference on Optical and Laser Diagnostics
2007

TABLE OF CONTENTS

Modern Optical Diagnostics in Engine Research	1
<i>A Leipertz, M Wensing</i>	
The Application of PIV to the Study of Unsteady Gas Dynamic Flow Within Pipes and at Pipe Discontinuities	9
<i>D Thornhill, R Fleck, H Li, J Woods</i>	
Effects of Intake Swirl and Coolant Temperature on Spray Structure of a High Pressure Multi-hole Injector in a Direct-injection Gasoline Engine	17
<i>S Kim, J M Nouri, Y Yan, C Arcoumanis</i>	
Measurements of Droplet Size Distribution and In-cylinder Mixture Formation from a Slit Injector in a Direct-injection Gasoline Engine	28
<i>S Moon, J Choi, K Yeom, C Bae</i>	
Investigation of Cavitation Development in the Lubricant Film of Piston-ring Assemblies	37
<i>A Dhunput, M Teodorescu, C Arcoumanis</i>	
Spontaneous Raman Scattering for Simultaneous Measurements of In-cylinder Species	47
<i>H Zhao, S Zhang</i>	
Optical Investigation of Heat Release and NO_x Production in Combustion	56
<i>B H Timmerman, P J Bryanston-Cross</i>	
Dynamic Measurements of Soot Aggregate Size in Diesel Exhaust by a Light Scattering Method	63
<i>T Kamimoto, M Shimono, M Kase</i>	
Laser Sheet Drop Sizing Using Raman and Mie Scattering	69
<i>A Malarski, B Schuerer, A Leipertz</i>	
Improvement of Planar Laser Diagnostics by the Application of a Beam Homogenizer	75
<i>S Pfadler, M Löffler, F Beyrau, A Leipertz</i>	
Planar Doppler Velocimetry Using a Mach-Zehnder Interferometric Filter	83
<i>Z-H Lu, T O H Charrett, H D Ford, R P Tatam</i>	
Flow and Pressure Characteristics Within a Screw Compressor	91
<i>D Guerrato, J M Nouri, N Stosic, C Arcoumanis</i>	
A Michelson Interferometer System for Testing the Stability of a Piezo-electric Actuator Intended for Use in Space	102
<i>K L Aplin, K F Middleton</i>	
Traceable Measurements for Beam Propagation Ratio M^2	107
<i>S R G Hall, S D Knox</i>	
The Potential for Development of an NH₃ Optical Fibre Gas Sensor	116
<i>P Chambers, W B Lyons, E Lewis, T Sun, K T V Grattan</i>	

POF Based Smart Sensor for Studying the Setting Dynamics of Cement Paste	120
<i>M Rajesh, M Sheeba, V P N Nampoori</i>	
Corrosion Induced Strain Monitoring Through Fibre Optic Sensors	128
<i>S K T Grattan, P A M Basheer, S E Taylor, W Zhao, T Sun, K T V Grattan</i>	
Fibre-optic UV Systems for Gas and Vapour Analysis	136
<i>H S Eckhardt, K-F Klein, B Spangenberg, T Sun, K T V Grattan</i>	
On-line Sizing and Velocity Measurement of Particles in Pneumatic Pipelines Through Digital Imaging	142
<i>K Roberts, Y Yan, R M Carter</i>	
A Spectroscopic Study for Detection of Carbon-monoxide Using Mid-infrared Techniques for Single-pass Measurement	148
<i>S Pal, K B Ozanyan, H McCann</i>	
Dynamic-speckle Profilometer for Online Measurements of Coating Thickness	157
<i>A A Kamshilin, D V Semenov, E Nippolainen, S Miridonov</i>	
Long Period Grating Pair Chloride Ion Sensor for Early Corrosion Prevention	163
<i>S K A Kaed Bey, C C C Lam, T Sun, K T V Grattan</i>	
Optical Monitoring of Micro Fluidic Flow Conditions, Employing Surface Plasmon Resonance Sensing	169
<i>C C L Loureiro, A M N Lima, H Neff</i>	
Fast-adaptive Fiber-optic Sensor for Ultra-small Vibration and Deformation Measurement	177
<i>R V Romashko, S Di Girolamo, Y N Kulchin, J C Launay, A A Kamshilin</i>	
Turbulence Time Series Data Hole Filling Using Karhunen-Lòeve and ARIMA Methods	185
<i>M P J L Chang, H Nazari, C O Font, G C Gilbreath, E Oh</i>	
Arterial Blood Oxygen Saturation During Blood Pressure Cuff-induced Hypoperfusion	193
<i>P A Kyriacou, K Shafqat, S K Pal</i>	
Validation of a Monte Carlo Platform for the Optical Modelling of Pulse Oximetry	201
<i>V A Peris, S Hu</i>	
Optical Images from Pathophysiological Signals Within Breast Tissue	207
<i>H Dehghani, B W Pogue, S Jiang, S Srinivasan, K D Paulsen</i>	
Photoplethysmographic Measurements from Central Nervous System Tissue	215
<i>J P Phillips, P A Kyriacou, S H Chang, K Maney, K J George, R M Langford</i>	
Optimal Spacing Between Transmitting and Receiving Optical Fibres in Reflectance Pulse Oximetry	222
<i>M Hickey, P A Kyriacou</i>	
The Preliminary Investigation of Imaging Photoplethysmographic System	230
<i>J Zheng, S Hu</i>	
Visualization of Nasal Airflow Patterns in a Patient Affected with Atrophic Rhinitis Using Particle Image Velocimetry	234
<i>G J M Garcia, G Mitchell, N Bailie, D Thornhill, J Watterson, J S Kimbell</i>	
A Systematic Approach for the Accurate Non-invasive Estimation of Blood Glucose Utilizing a Novel Light-tissue Interaction Adaptive Modelling Scheme	241
<i>V O Rybynok, P A Kyriacou</i>	

Optical Detection Techniques and Light Delivery with UV LEDs and Optical Fibres	250
<i>M Belz, F A Klein, H S Eckhardt, K-F Klein, D Dinges, K T V Grattan</i>	
Internal and Near Nozzle Flow Characteristics in an Enlarged Model of an Outwards Opening Pintle-type Gasoline Injector	256
<i>J M Nouri, E Abo-Serie, A Marchi, N Mitroglou, C Arcoumanis</i>	
Investigation of Spray Characteristics in a Spray-guided DISI Engine Using PLIF and LDV	268
<i>Y Yan, S Gashi, J M Nouri, R D Lockett, C Arcoumanis</i>	
Spray Characterization of a Piezo Pintle-type Injector for Gasoline Direct Injection Engines	281
<i>J M Nouri, M A Hamid, Y Yan, C Arcoumanis</i>	
Author Index	