

# **2011 12th International Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems**

**(EuroSimE 2011)**

**Linz, Austria  
18 – 20 April 2011**



**IEEE Catalog Number: CFP11566-PRT  
ISBN: 978-1-4577-0107-8**

# TABLE OF CONTENTS

<b>System-level Model Electrothermal Microsystem with Temperature Control Circuit</b> .....	1
<i>T. Bechtold, E. B. Rudnyi, D. Hohlfeld</i>	
<b>Cure Dependent Characterisation of Moulding Compounds</b> .....	6
<i>K. M. B. Jansen, M. Hawryluk, P. Gromala</i>	
<b>Thermal Investigation of a Battery Module for Work Machines</b> .....	12
<i>Yasir Abdul-Quadir, Perttu Heikkilä, Teemu Lehmuspelto, Juha Karppinen, Tomi Laurila, Mervi Paulasto-Kröckel</i>	
<b>Developing the Mesoscale Stress-Strain Curve to Failure</b> .....	18
<i>Nancy Iwamoto</i>	
<b>Evaluation of the Change of the Residual Stress in Nano-scale Transistors During the Deposition and Fine Patterning Processes of Thin Films</b> .....	25
<i>Kota Nakahira, Hironori Tago, Hiroki Kishi, Ken Suzuki, Hideo Miura, Masaki Yoshimaru, Ken-Ichiro Tatsuuma</i>	
<b>Design of Athermalized Proximity Coupled (APC) Synthetic Green Laser Opto-electronic Package for Microprojector Displays: Numerical Modeling and Experiments</b> .....	31
<i>S. Chaparala, V. Bhagavatula, J. Himmelreich</i>	
<b>Mechanical Model of a Mems Inertial Rotational Gyroscope</b> .....	40
<i>Francesco Braghin, Elisabetta Leo, Ferruccio Resta, Stefano Cerra</i>	
<b>Mechanical Model of a MEMS Inertial Rotational Gyroscope</b> .....	48
<i>Francesco Braghin, Elisabetta Leo, Ferruccio Resta, Andrea Castro, Stefano Cerra</i>	
<b>Energy Release Rate Investigation for Through Silicon Vias (TSVs) in 3D IC Integration</b> .....	56
<i>Ming-Che Hsieh, Sheng-Tsai Wu, Chung-Jung Wu, John H. Lau, Ra-Min Tain, Wei-Chung Lo</i>	
<b>Electrothermal Prediction Model of Cu Low k Interconnection on Glass Substrate</b> .....	63
<i>L. Siebert, G. Fiannaca, F. Roqueta, G. Gautier, C. Anceau</i>	
<b>Electro-Thermal Analysis of the Insulated Gate Bipolar Transistor Module Subjected to Power Cycling Test Using Specified Boundary Condition Technology</b> .....	68
<i>Shih-Ying Chiang, Tuan-Yu Hung, Hsien-Chih Ou, Kuo-Ning Chiang</i>	
<b>Effects of the Electrode Positions on the Dynamical Behaviour of Electrostatically Actuated MEMS Resonators</b> .....	73
<i>M. Pustan, S. Paquay, V. Rochus, J. C. Golinval</i>	
<b>Investigation of Thin Films by Nanoindentation with DOE and Numerical Methods</b> .....	79
<i>Lukasz Dowhan, Artur Wymyslowski, Olaf Wittler</i>	
<b>Vibration Characterization of a MEMS 3D Force Sensor</b> .....	86
<i>M. Erinc, H. J. Van De Wiel, R. J. Werkhoven, A. Pongrácz, G. Battistig, H. R. Fischer</i>	
<b>Comprehensive Material Characterization and Method of its Validation by Means of FEM Simulation</b> .....	92
<i>P. Gromala, J. Duerr, M. Dressler, K. M. B. Jansen, M. Hawryluk, J. De. Vreugd</i>	
<b>Modelling of Metal Degradation in Power Devices Under Active Cycling Conditions</b> .....	100
<i>W. Kanert, R. Pufall, O. Wittler, R. Dudek, M. Bouazza</i>	
<b>Thermo-Mechanical Simulations and Measurements on High Temperature Interconnections</b> .....	106
<i>Klas Brinkfeldt, Rafael Amen, Erik Adolfsson, Per-Erik Tegehall, Per Johander, Dag Andersson</i>	
<b>Lifetime Prediction for Solder Joints with the Extended Finite Element Method</b> .....	113
<i>Alexander Menk, Chris J. Pearce, Olivier Lanier, Robert Simpson, Stephane P.A. Bordas</i>	
<b>Monte Carlo Simulation of X-Ray Diffraction Embedded in Experimental Determination of Residual Stresses in Microsystems</b> .....	121
<i>U. Zschenderlein, B. Wunderle</i>	
<b>Comparison of Metaheuristic Algorithms for Simulation Based OPF Computation</b> .....	128
<i>S. Hutterer, F. Auinger, M. Affenzeller</i>	
<b>Stress/Stain Assessment and Reliability Prediction of Through Silicon Via and Trace Line Structures of 3D Packaging</b> .....	132
<i>Ting-Hsin Kuo, Yen-Fu Su, Chung-Jung Wu, Kuo-Ning Chiang</i>	
<b>Analytical Estimate for Cure-Induced Stresses and Warpage in Flat Packages</b> .....	137
<i>K. M. B. Jansen, J. De Vreugd, L. J. Ernst</i>	
<b>Study on Passive Micro Direct Methanol Fuel Cell</b> .....	141
<i>Cao Yijiang, Zhang Yufeng, Xu Biao, Yin Jinghua, Liu Xiaowei</i>	
<b>Research on the Failure Property of VDMOS Device by Thermal Cycles</b> .....	146
<i>Yin Jinghua, Hua Qing, He Yanqiang, Cao Yijiang, Chen Minghua, Liu Ting, Liu Xiaowei</i>	
<b>FEA Study on Electrical Interconnects for a Power QFN Package</b> .....	150
<i>Erwin Ian V. Almagro, Benjie B. Hornales, Marvin R. Gestole</i>	

<b>Enhancing the Lifetime Prediction Methodology for Photovoltaic Modules Based on Electronic Packaging Experience</b> .....	154
<i>M. Guyenot, E. Peter, P. Zerrer, F. Kraemer, S. Wiese</i>	
<b>FEM Based Modeling and Optimization of a 2D Micro Mirror</b> .....	158
<i>Wolfram Schock, Jan Mehner, Joachim Fritz, Jorg Muchow, Christoph Friese, Stefan Pinter</i>	
<b>Modeling, Filtering and Optimization for AFM Arrays</b> .....	164
<i>H. Hui, Y. Yakoubi, M. Lenczner, S. Cogan, A. Meister, M. Favre, R. Couturier, S. Domas</i>	
<b>Computer–Aided Multiscale Model Derivation for MEMS Arrays</b> .....	170
<i>B. Yang, W. Belkhir, R. N. Dhara, M. Lenczner, A. Giorgetti</i>	
<b>Molecular Dynamics Study of the Traction-displacement Relations of Epoxy-copper Interfaces</b> .....	176
<i>C. K. Y. Wong, S. Y. Y. Leung, R. H. Poelma, K. M. B. Jansen, C. C. A. Yuan, W. D. Van Driel, G. Q. Zhang</i>	
<b>Degradation of Moulding Compounds During Highly Accelerated Stress Tests. a Simple Approach to Study Adhesion by Performing Button Shear Tests</b> .....	181
<i>R. Pufall, M. Goroll, J. Mahler, W. Kanert, M. Bouazza, O. Wittler, R. Dudek</i>	
<b>Moisture Diffusion Modeling and its Impact on Fracture Mechanics Parameters with Regard to a PQFP</b> .....	186
<i>Siow Ling Ho, Andrew A. O. Tay</i>	
<b>Modeling, Simulation and Validation of the Dynamic Performance of a Single-Pole Single-Throw RF-MEMS Contact Switch</b> .....	194
<i>Cuong Do, Martin Hill, Maryna Lishchynska, Marcin Cychowski, Kieran Delaney</i>	
<b>FE Modeling of Cu Wire Bond Process and Reliability</b> .....	200
<i>Cadmus Yuan, Esther Weltevreden, Pieter Van Dan Akker, René Kregting, Jan De Vreugd, G. Q. Zhang</i>	
<b>Modelling Aluminium Wire Bond Reliability in High Power OMP Devices</b> .....	205
<i>René Kregting, Cadmus Yuan, An Xiao, Frank de Bruijn</i>	
<b>The Impact of Moisture Absorption on the Electrical Characteristics of Organic Dielectric Materials</b> .....	209
<i>Brian Curran, Ivan Ndiip, Jorg Bauer, Stephan Guttowski, Klaus Dieter Lang, Herbert Reichl</i>	
<b>A Multi-Scale Approach to the Thermo-Mechanical Behaviour of Silica-Filled Epoxies for Electronic Packaging</b> .....	214
<i>E. R. Weltevreden, M. Erinc, S. J. Tesarski, A. Wymyslowski, A. Mavinkurve, A. W. J. Gielen</i>	
<b>Moisture Diffusion and Integrated Stress Analysis in Encapsulated Microelectronics Devices</b> .....	218
<i>Xuejun Fan, Jie-Hua Zhao</i>	
<b>Accelerated Fatigue Testing Methodology for Reliability Assessments of Fiber Reinforced Composite Polymer Materials in Micro/Nano Systems</b> .....	226
<i>Sven Rzepka, Hans Walter, Remi Pantou, Yuval Freed, Bernd Michel</i>	
<b>Distributed Modeling Approach Applied to the Power PIN Diode Using VHDL-AMS</b> .....	231
<i>A. Hneine, J. L. Massol, P. Tounsi, P. Austin</i>	
<b>Optimization of Solder Joint Configuration in Multi-chip Packaging System</b> .....	238
<i>Benjie Balos Hornales</i>	
<b>Piezoelectric Membrane Actuator Design</b> .....	242
<i>F. Casset, M. Cuffe, E. Defay, G. Le Rhun, A. Suhm, P. Ancey, A. Devos</i>	
<b>Mechanical Properties of Intermetallics Formed During Thermal Aging of Cu-Al Ball Bonds</b> .....	247
<i>M. H. M. Koutersa, G. H. M. Gubbels, O. O'Halloran, R. Rongen, E. R. Weltevreden</i>	
<b>Challenges of Power Electronic Packaging and Modeling</b> .....	250
<i>Yong Liu, Dan Kinzer</i>	
<b>Evaluation of Polymer Wafer Bonding with Silicone Adhesive and Patterned Trenches</b> .....	259
<i>Jeffery C. C. Lo, Rong Zhang, S. W. Ricky Lee, Zelin Wang</i>	
<b>Interaction Integral and Mode Separation for BEoL-cracking and -delamination Investigations Under 3D-IC Integration Aspects</b> .....	264
<i>J. Auersperg, R. Dudek, J. Oswald, B. Michel</i>	
<b>Investigation of Benzenethiol (BT) Materials as Adhesion Promoter for Cu/Epoxy Interface Using Molecular Dynamic Simulation</b> .....	271
<i>Peng He, Haibo Fan, Matthew M. F. Yuen</i>	
<b>Influence of Multiphysics Couplings on the Performance of a MEMS Magnetometer</b> .....	276
<i>S. Ranvier, S. Paquay, S. Requier, H. Lamy, V. Rochus, L. A. Francis, P. Rochus</i>	
<b>Board Level Flat and Vertical Drop Impact Reliability for Wafer Level Chip Scale Package</b> .....	282
<i>Richard Qian, Yong Liu, Jihwan Kim, Stephen Martin</i>	
<b>Thermal Mechanical Modeling and Assessment for a Novel Power System Module with Vertical Input Capacitor</b> .....	289
<i>Richard Qian, Yumin Liu, Yong Liu, Steve Martin, O. S Jeon</i>	
<b>A Substructure Method for Strip Level Warp Simulation of a Power Module in Assembly Process</b> .....	297
<i>Jianghai Gu, Lihua Liang</i>	

<b>Improving the Solderability and Electromigration Behavior of Low-Ag SnAgCu Soldering</b> .....	304
<i>Sun Fenglian, Liu Yang, Liu Yang, Wang Jiabing</i>	
<b>Generation of Reduced Thermal Models of Electronic Systems from Transient Thermal Response</b> .....	309
<i>Marcin Janicki, Mariusz Zubert, Andrzej Napieralski</i>	
<b>A Model for Static and Dynamic Thermal Analysis of Thin Film MEMS Structures including the Thermal Conductivity of the Surrounding Gas</b> .....	313
<i>G. de Graaf, Huai-Wen Wu, R.F. Wolffenbuttel</i>	
<b>Studies on the Reliability of Power Packages Based on Strength and Fracture Criteria</b> .....	318
<i>Rainer Dudek, Reinhard Pufall, Bettina Seiler, Bernd Michel</i>	
<b>Hydrogen-Passivated Graphene Antidot Structures for Thermoelectric Applications</b> .....	326
<i>Hossein Karamitaheri, Mahdi Pourfath, Rahim Faez, Hans Kosina</i>	
<b>Local Strength Measurement Technique for Miniaturised Silicon-Based Components</b> .....	330
<i>Marco Delucaa, Raúl Bermejo, Martin Pletz, Mike Morianz, Johannes Stahr, Peter Supancic, Robert Danzer</i>	
<b>Heat Sink Design for Optimal Thermal Management</b> .....	334
<i>D. Hofinger, M. Jungwirth, H. Pflügelmeier, A. Eder</i>	
<b>Numerical Investigation of the Process of Embedding Components into Printed Circuit Boards</b> .....	338
<i>Martin Pletz, Raúl Bermejo, Peter Supancic, Johannes Stahr, Mike Morianz</i>	
<b>Cyclic Loading and Fatigue in Power Packages</b> .....	346
<i>Torsten Hauck</i>	
<b>Compact Model for the Electronic Properties of Edge-Disordered Graphene Nanoribbons</b> .....	350
<i>Arash Yazdanpanah Goharrizi, Mahdi Pourfath, Morteza Fathipour, Hans Kosina</i>	
<b>A Comprehensive Study of Nanoscale Field Effect Diodes</b> .....	354
<i>N. Manavizadeh, M. Pourfath, F. Raissi, E. Asl-Soleimani</i>	
<b>Thermal Simulation and Validation of 8W LED Lamp</b> .....	358
<i>Jiri Jakovenko, Robert Werkhoven, Jan Formánek, Jos Kunen, Pieter Bolt, Pavel Kulha</i>	
<b>A Study on Thermal Analysis for 3D Heterogenous Embedded System Integration Platform MorPACK</b> .....	362
<i>Jin-Ju Chue, Chih-Chyau Yang, Shih-Lun Chen, Chun-Chieh Chiu, Yi-Jun Liu, Chun-Chieh Chu, Chien-Ming Wu, Chun-Ming Huang</i>	
<b>Simulation of Lateral Effect in Emitter Region of Silicon Solar Cells for Concentrated Sunlight</b> .....	366
<i>Ali Alimardani, Negin Manavizadeh, Ali Afzali-Kusha, Ebrahim Asl-Soleimani</i>	
<b>On the Nonlinear Behaviour of MEMS Resonators</b> .....	371
<i>C.Comi, A. Corigliano, G. Langfelder, A. Longoni, A. Tocchio</i>	
<b>Thermo-Mechanical Challenges of Advanced Solar Cell Modules</b> .....	377
<i>Mario Gonzalez, Jonathan Govaerts, Riet Labie, Ingrid De Wolf, Kris Baert</i>	
<b>Dynamic Compact Thermal Model for Electrothermal Modeling and Design Optimization of Automotive Power Devices</b> .....	384
<i>T. Azoui, P. Tounsi, G. Pasquet, Ph. Dupuy, J. M. Dorkel</i>	
<b>A Dual Stage Model of Anomalous Moisture Diffusion and Desorption in Epoxy Mold Compounds</b> .....	390
<i>Mark D. Placette, Xuejun Fan, Jie-Hua Zhao, Darvin Edwards</i>	
<b>Numerical Modelling and Optimization of an Electronic System Embedded in Multi-Layered Viscoelastic Materials under Shock Loads</b> .....	398
<i>Amjad Alsakarneh, Liam Moore, John Barrett</i>	
<b>Recent Developments in Reduced Order Modeling Based on Mode Superposition Technique</b> .....	406
<i>Vladimir Kolchuzhin, Michael Naumann, Jan Mehner</i>	
<b>The Creep Behaviour and Microstructure of Ultra Small Solder Joints</b> .....	412
<i>S. Wiese, M. Mueller, I. Panchenko, R. Metasch, K. J. Wolter</i>	
<b>Impact of VDMOS Source Metallization Ageing in 3D FEM Wire Lift off Modeling</b> .....	418
<i>E. Marcault, T. Azoui, P. Tounsi, M. Breil, A. Bourennane, P. Dupuy</i>	
<b>Impact of the Solder Joint Ageing on IGBT I-V Characteristics using 2D Physical Simulations</b> .....	423
<i>E. Marcault, M. Breil, A. Bourennane, P. Tounsi, P. Dupuy</i>	
<b>Study of Constant Rate and Constant Force Low Cycle Fatigue Methods for Solder Characterization</b> .....	427
<i>R. Metasch, G. Rodrigues, M. Roellig, P. A. P. Wendhausen, K. J. Wolter</i>	
<b>Thermo-Mechanical Assessment of Solar Cell Displacement with Respect to the Viscoelastic Behaviour of the Encapsulant</b> .....	433
<i>Matthias Pander, Sascha Dietrich, Stefan H. Schulze, Ulrich Eitner, Matthias Ebert</i>	
<b>Development of a Drop Test Methodology for Solar Cells with FEM Simulations</b> .....	439
<i>Frank Kraemer, Steffen Wiese</i>	
<b>Assessment of Thermo Mechanical Properties of Crosslinked Epoxy Mesoscale Approach – preliminary Results</b> .....	444
<i>Sebastian J. Tesarski, Artur Wymysowski, Ole Hölck</i>	

<b>Au-Au ‘Cold-weld’ Bond Strength in Adhesively Bonded Flip-Chip Interconnects</b> .....	449
<i>K. Sinha, D. Farley, T. Kahnert, A. Dasgupta</i>	
<b>The Effect of Secondary Impacts on PWB-level Drop Tests at High Impact Accelerations</b> .....	453
<i>S. Douglas, J. Meng, J. Akman, I. Yildiz, M. Al-Bassiyouni, A. Dasgupta</i>	
<b>Determination of Strength of Interface in Packages Based on an Approach Using Coupling of Experimental and Modeling Results</b> .....	459
<i>Diane Weidmann, Guillaume Dubois, Michael Hertl, Xavier Chauffleur</i>	
<b>Simulation of Aging Effects on Radiated Emission of Microstrip Line</b> .....	465
<i>Hassene Fridhi , Geneviève Duchamp, Valérie Vignéras</i>	
<b>Life Time Prediction for Lead-free Solder Joints under Vibration Loads</b> .....	471
<i>Karsten Meier, Mike Roellig, Andreas Schiessl, Klaus-Juergen Wolter</i>	
<b>Thermal Performance of LED Packages for Solid State Lighting with Novel Cooling Solutions</b> .....	479
<i>Kai Zhang, David G. W. Xiao, Xiaohua Zhang, Haibo Fan, Zhaoli Gao, Matthew M. F. Yuen</i>	
<b>Comparative Characterization of Chip to Epoxy Interfaces by Molecular Modeling and Contact Angle Determination</b> .....	486
<i>O. Hölck, J. Bauer, O. Wittler, B. Michel, B. Wunderle</i>	
<b>Analytical Modelling of Transient Processes in Thermal Microsensors</b> .....	493
<i>A. G. Kozlov, D. Randjelovic, Z. Djuric</i>	
<b>Thermal Performance Analysis of Photoelectric Parameters on High-power LEDs Packaging Modules</b> .....	500
<i>Lei Liu, Daoguo Yang, G. Q. Zhang, Zhi You, Fengze Hou, Dongjing Liu</i>	
<b>Design Issues in Electrostatic Microplate Actuators: Device Stability and Post Pull-in Behaviour</b> .....	505
<i>Emanuele Bertarelli, Raffaele Ardito, Andreas Greiner, Jan G. Korvink, Alberto Corigliano</i>	
<b>Thermal Transient Analysis of LED Array System with In-line Pin Fin Heat Sink</b> .....	511
<i>Fengze Hou, Daoguo Yang, G. Q. Zhang, Yang Hai, Dongjing Liu, Lei Liu</i>	
<b>Numerical Modeling of Thermal Performance: Natural Convection and Radiation of Solid State Lighting</b> .....	516
<i>H. Ye, A. W. J. Gielen, H. W. VanZeijl, R. J. Werkhoven, G. Q. Zhang</i>	
<b>Impact of Thermal Ageing on Cohesive and Adhesive Strengths of Overmould Materials: Characterisation Methods and Implementation in FEM</b> .....	522
<i>A. Ivankovic, K. Vanstreels, Y.Y Hsu, M. Gonzalez, G. Brizar, D. Vanderstraeten, E. Blansaer, R. Gillon, Martijn Defloor, K. Vandaele, D. Degryse, B. Vandevelde</i>	
<b>Electromigration, Fuse and Thermo-Mechanical Performance of Solder Bump Versus Cu Pillar Flip Chip Assemblies</b> .....	527
<i>B. Vandevelde, R. Labie, V. Cherman, T. Webers, C. Winters, E. Beyne, Franck Dossoul</i>	
<b>LED System Reliability</b> .....	533
<i>W. D. Van Driel, C. A. Yuan, S. Koh, G. Q. Zhang</i>	
<b>Low Cycle Fatigue Crack Growth In Nanostructure Copper</b> .....	538
<i>S. Koh, A. Saxena, W. D. Van Driel, G. Q. Zhang, R. Tummala</i>	
<b>Degradation of Epoxy Lens Materials in LED Systems</b> .....	545
<i>S. Koh, Willem Van Driel, G. Q. Zhang</i>	
<b>Co-design of Wafer Level Thin Film Package Assembly</b> .....	550
<i>J. J. M. Zaal, F. Santagata, W. D. Van Driel, G. Q. Zhang, J. F. Creemer, P. M. Sarro</i>	
<b>Prediction of Mixed-Mode Interfacial Fracture from Cohesive Zone Finite Element Model: Testing and Determination of Fracture Process Parameters</b> .....	556
<i>S. Y. Y. Leung, M. Sadeghinia, H. Pape, L. J. Ernst</i>	
<b>Non-Equilibrium Molecular Dynamics Simulation of Heat Transfer in Carbon Nanotubes - Verification and Model Validation</b> .....	563
<i>Tomasz Falat, Bartosz Platek, Jan Felba</i>	
<b>The Influence of Molecular Dynamics Simulation Parameters on the Accuracy of Carbon Nanotubes Thermal Conductivity Calculations</b> .....	568
<i>Bartosz Platek, Tomasz Falat, Jan Felba</i>	
<b>Keynote Presentation - Prognostics and Health Monitoring of Electronic Systems</b> .....	574
<i>Pradeep Lall, Ryan Lowe, Kai Goebel</i>	
<b>Simulation Environment for MEMS Sensors and Actuators</b> .....	591
<i>Manfred Kaltenbacher, Helmut Kock</i>	
<b>Simulation Based Design of Mechatronic Systems</b> .....	597
<i>Mario Jungwirth, Daniel Hofinger, Heinz Weinzierl</i>	
<b>Fatigue Model based on Average Cross-Section Strain of Cu Trace Cyclic Bending</b> .....	598
<i>D. Farley, A. Dasgupta, Y. Zhou, J. F. J. Caers, J. W. C. De Vries</i>	
<b>Multi-Physics and Multi-Disciplinary Analysis for Solid State Lighting</b> .....	608
<i>C. Bailey, C. Yin, H. Lu, C. Cartwright</i>	

<b>Fracture Toughness of Cu-EMC Interfaces under Pressure Cooker Conditions</b> .....	613
<i>M. Sadeghinia, K. M. B. Jansen, L. J. Ernst, G. Schlottig, H. Pape</i>	
<b>Reliability of Semiconductor Devices – The Need for Simulation</b> .....	618
<i>Werner Kanert</i>	
<b>Development of a Standard for Transient Measurement of Junction-To-Case Thermal Resistance</b> .....	623
<i>Heinz Pape, Dirk Schweitzer, Liu Chen, Rudolf Kutscherauer, Martin Walder</i>	
<b>Ultrasonic Stresses in Thermosonic Ball Bonding</b> .....	631
<i>Michael Mayer</i>	
<b>Buckling Analysis of Carbon Nanotubes and the Influence of Defect Position</b> .....	636
<i>R. H. Poelma, H. Sadeghian, Sau Koh, G. Q. Zhang</i>	
<b>Temperature Dependency in Performance of Solid State Lighting Drivers</b> .....	643
<i>S. Tarashioon, S. W. Koh, W. D. Van Driel, G. Q. Zhang</i>	
<b>Author Index</b>	