

SAE 2009 Brake Colloquium and Exhibition

Technical Session Schedule

As of 10/17/2009 07:40 pm

Sunday, October 11

Environmental Issues

Session Code: BC109

Room Ballroom A/B

Session Time: 3:30 p.m.

The session provides the status and issues with the various worldwide environmental regulatory and legislative actions (i.e., REACH, ELV, IMDS, California Copper, Green Chemistry Initiative..) as well as the latest studies in wear debris analysis.

Organizers - Stephen Brown, Samarium LLC; Kwangjin M. Lee, Delphi Corp.

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
3:30 p.m.	2009-01-3005 ORAL ONLY	Wear Mechanisms in Automotive Brake Materials Plus Characterization and Potential Environmental Impact of Wear Debris Jana Kukutschova, VSB Technical University Ostrava; Peter Filip, Southern Illinois Univ at Carbondale; Vaclav Roubicek, VSB - Technical University Ostrava; Donald MacCrimmon, Southern Illinois Univ
3:55 p.m.	ORAL ONLY	European Environmental Regulations in Friction Materials Nanty Hautus, Lapinus Fibres BV
4:20 p.m.	ORAL ONLY	California Copper SB346 Update William P. Hilbrandt, Akebono Corp.
4:40 p.m.	ORAL ONLY	Green Chemistry Initiative (written presentation will be made available by the California Dept. of Toxic Substances Control) Stephen Brown, Samarium LLC
4:45 p.m.	ORAL ONLY	Suppliers Partnership for the Environment (SP) - Material Assessment Strategy Pat Beattie, Arcalis Scientific, Suppliers Partnership for Environment

Monday, October 12

OEM Brake Management Panel Discussion

Session Code: BC200

Room Ballroom A/B

Session Time: 8:00 a.m.

Join the key leaders of the Brake activities within the major OEMs to learn what to expect for the future in terms of business activities and technical issues which will be encountered as we move forward. This is critical opportunity for everyone in the Brake community

Organizers - Roy H. Link, Link Engineering Co.

Moderators - Paul E. Smith, Sr Mgr, Brakes Controls, Wheels & Tires, Chrysler Group LLC

Panelists - Martin A. Hogan, Director, Brakes & Controls, General Motors Company; Ali Jammoul, Chassis Chief Engineer, Ford Motor Company; Hadrian Rori, VP Vehicle Engineering, Bright Automotive; Yukihiko Shiomi, Group Mgr, Brake Sys Dev Dept, Toyota Motor Corporation; Yasushi Sukanuma, Chief Engineer, Honda R&D Co., Ltd.;

Monday, October 12

Modeling (Part 1 of 2)

Session Code: BC105

Room Ballroom A/B**Session Time: 10:20 a.m.**

Simulation methodologies are a core competence for the efficient design and development of brake systems with high quality in the current business environment. But CAE experts know that the complexity and the nonlinearities are an extreme challenge, and we need further research and development of physical models and numerical approaches.

In this session you will see interesting examples of the state-of-the-art, from chassis systems dynamics to the simulation of little wear particles in brakes.

Organizers - Theo Kaster, TRW Automotive; Antoine Nehme, Peugeot Citroen Automobiles SA

Time	Paper No.	Title
10:20 a.m.	2009-01-3038	Systematic Brake Development Process and Optimized Robust Design of Front Axle Kinematics in Order to Reduce Oscillation Sensitivity <i>Albert Schlecht, Technische Universitaet Muenchen; Jan Muenchhoff, Audi AG; Bernd Heissing, Technische Universitaet Muenchen</i>
10:45 a.m.	ORAL ONLY	A Comparison of Two FEA Approaches to Simulate Moan Noise <i>Antoine Nehme, Peugeot Citroen Automobiles SA</i>
11:10 a.m.	2009-01-3046	Optimization and Sensitivity Analysis of Brake Rotor Frequencies <i>Manoj Nelagadde, Edmond Smith, SANLUIS Rassini Frenos</i>

Monday, October 12**Modeling (Part 2 of 2)****Session Code: BC105****Room Ballroom A/B****Session Time: 1:55 p.m.**

Organizers - Theo Kaster, TRW Automotive; Antoine Nehme, Peugeot Citroen Automobiles SA

Time	Paper No.	Title
1:55 p.m.	2009-01-3048	Towards an Explicit Computation of Wear in Brake Systems <i>Michael Mueller, Georg Ostermeyer, Matthias Graf, Braunschweig University of Technology</i>
2:20 p.m.	2009-01-3040	Simulation of Airborne Wear Particles from Disc Brakes <i>Jens Christian Wahlstrom, Anders Soderberg, Ulf Olofsson, The Royal Institute of Techology</i>
2:45 p.m.		BREAK
3:10 p.m.	2009-01-3041	Modeling Disc Pad Shoe-Lining Interface by CWELD Elements <i>Weiming Liu, Federal-Mogul Friction Products, Ltd.</i>
3:35 p.m.	2009-01-3043	Brake System Simulation to Predict Brake Pedal 'Feel' in a Passenger Car <i>Andrew Day, Hon Ping Ho, University of Bradford; Khalid Hussain, University of Bradford ; Allan Johnstone, Honda R&D Europe (UK) Ltd</i>
	2009-01-3039	Experimental Research on Heavy-Duty Tractor Heat Performance of Brake (Written Only -- No Oral Presentation) <i>Wang Xuanfeng, Harbin Institute of Technology</i>
	2009-01-3049	Cooling Analysis of a Passenger Car Disk Brake (Written Only -- No Oral Presentation) <i>Thomas Christian Schuetz, Audi AG</i>

Monday, October 12

Friction Materials

Session Code: BC100

Room Ballroom C/D

Session Time: 1:30 p.m.

Organizers - Peter Filip, Southern Illinois Univ. at Carbondale; Georg P. Ostermeyer, Technical Univ. of Braunschweig

Time	Paper No.	Title
1:30 p.m.	2009-01-3010	Tribological Aspects of Carbon Ceramic and Cast-Iron Brake Rotors with Organic Pad Materials in Simulation and Measurement Georg P. Ostermeyer, Kai Bode , Institute of Dynamics and Vibrations (TU Braunschweig); Gregor Stuehler , SGL Brakes GmbH; Andreas Elvenkemper , formerly TMD Friction Services GmbH; Axel Stenkamp, TMD Friction Services GmbH
1:55 p.m.	2009-01-3013	An Evaluation Method of Brake Pads for New Titanates Shogo Kamada, Kosuke Inada, Mattie Downey, Yoshinori Yamamoto, Otsuka Chemical Co., Ltd.
2:20 p.m.	2009-01-3016	Formula and Structure Effect of Frictional Materials on their Damping Properties and NVH Performance of Friction Joints Vladimir P. Sergienko, Sergey Bukharov, National Academy of Sciences of Belarus
2:45 p.m.		BREAK
3:10 p.m.	2009-01-3019	Application of Extension Evaluation Method in Development of Novel Eco-friendly Brake Materials Rongping Yun, Yafei Lu, Beijing University of Chemical Technology; Peter Filip, Southern Illinois Univ at Carbondale
3:35 p.m.	2009-01-3020	The Influence of Brake Wear Debris Chemical Properties on Wheel Dust Takashi Kikudome, Mitsuo Unno, Yuki Yoshida, Hitachi Chemical
4:00 p.m.	2009-01-3021	Phenomenological Approach to the Automotive Disc-Scoring Phenomena Related to Metal Pick up Generation on Brake Pad Surface Umberto Passarelli, Pietro Durando, Pietro Buonfico, ITT Italia s.r.l.
4:25 p.m.	2009-01-3053	Genesis of the Third-Body at the Pad-Disc Interface: Case Study of a Sintered Metal Matrix Composite Lining Material Yannick Desplanques, Gérard degallaix, Ecole Centrale de Lille
	2009-01-3008	Prediction of Brake Friction Materials Speed Sensitivity (Written Only -- No Oral Presentation) Dragan S. Aleksendric, University of Belgrade Faculty of Mechanical Engineering
	2009-01-3017	Relation between Compressibility and Viscoelastic Material Properties of a Brake Pad (Written Only -- No Oral Presentation) Enrique Wegmann, Axel Stenkamp, Achim Dohle , TMD Friction GmbH

Tuesday, October 13

Keynote Address

Session Code: BC210

Room Ballroom A/B

Session Time: 8:00 a.m.

Keynote Speakers - Rudolf Limpert

Tuesday, October 13

Brake Technology (Part 1 of 2)

Session Code: BC102

Room Ballroom A/B

Session Time: 9:40 a.m.

This first session of Brake Technology follows the key note discussion with two talks addressing Brake System issues being faced with new vehicle architectures (hybrid and electric vehicles) and the intense challenges of weight reduction. The third paper addresses design factors for electric park brake systems.

Organizers - James W. Fash, Federal-Mogul Corp.; Jae Seung Cheon, Hyundai MOBIS

Time	Paper No.	Title
9:40 a.m.	ORAL ONLY	The Role of Friction Brakes in Electric or Hybrid Cars <i>Juergen Lange, Roland Steege, TMD Friction</i>
10:05 a.m.	ORAL ONLY	Brake System Weight Reduction by System Optimization, Components improvements and utilizing ESC function <i>Hidetoshi Shimizu, ADVICS North America Inc.</i>
10:30 a.m.	2009-01-3022	Investigation of Main Control Design Factors to Improve Performance of Cable Puller Type and Caliper Integrated Type Electric Parking Brakes <i>Jae Seung Cheon, Jaewoo Jeon, Mobis</i>

Tuesday, October 13

Brake Technology (Part 2 of 2)

Session Code: BC102

Room Ballroom A/B

Session Time: 1:30 p.m.

The first section of this session addresses important issues for rotor design and component variability relative to brake noise and for brake roughness/judder. Design factors are discussed and supporting experimental data are presented. In the second segment of this session, three papers are presented which address electronic park brake systems design considerations, brake tube joint design issues and finally, noise shim design factors for controlling NVH.

Organizers - James W. Fash, Federal-Mogul Corp.; Jae Seung Cheon, Hyundai MOBIS

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	A Robust Experimental Evaluation of a Novel Cool Disc Brake Design <i>John D. Fieldhouse, Univ. of Huddersfield</i>
1:55 p.m.	2009-01-3030	Effects of Chemical Components and Manufacturing Process of Cast Iron Brake Disc on its Resonant Frequency Variation <i>Jae young Lee, Hyun Dal Park, Seong Jin Kim, Jaemin Han, Hyundai & Kia Corporate ; Yoon cheol kim, Hyundai & Kia Corporate</i>
2:20 p.m.	2009-01-3029	Increasing Thermal Strength of Brake Discs by Improving Material Homogeneity <i>Toshikazu Okamura, Masanori Imasaki, KIRIU Corp.</i>
2:45 p.m.		BREAK

3:10 p.m.	2009-01-3023	Characterization of Brake Torque Variation of Wave Type Brake Disc for Motorcycles Kiyotaka Obunai, Doshisha Univ
3:35 p.m.	2009-01-3024	Sphere-To-Cone Mating: New Solution to Improve Brake Tube Connector Sealing Robustness Stanislav Pliassounov
4:00 p.m.	2009-01-3035	Development of Cold Noise Brake Insulator Solutions Christopher T. Griffen, Wolverine Advanced Materials LLC

Tuesday, October 13

NVH (Part 1 of 2)

Session Code: BC101

Room Ballroom C/D

Session Time: 9:40 a.m.

The Brake NVH session includes a variety of papers covering both test and modeling activities. These publications are focused building a greater understanding of brake noise and developing means to prevent or rectify brake noise issues. The quantity and quality of papers make this one of the most important collections of publications on the topic available.

Organizers - Hidetoshi Shimizu, ADVICS North America Inc.; James K. Thompson, Bruel & Kjaer North America Inc.

Time	Paper No.	Title
9:40 a.m.	ORAL ONLY	Investigation of Variation in Friction Force During Squeal Noise Takeshi Yamane, Nisshinbo Automotive Corp.
10:05 a.m.	2009-01-3036	Study of Low-Pressure Brake Squeal focusing on Torque Receiving Face Hayuru Inoue, Hitachi Automotive Systems, Ltd.
10:30 a.m.	2009-01-3044	An Experimental Investigation of Brake Rotor DTV under Laboratory Conditions - Part 2 Alan Backstrom, Romteck
10:55 a.m.	2009-01-3037	Current and New Approaches for Brake Noise Evaluation and Rating Harald Abendroth, Consultant; Michael Christian Haverkamp, Ford Motor Co.; Wolfgang Hoffrichter, TMD Friction; Peter Blaschke, Guenter Mauer, HEAD acoustics GmbH; Boris A. Wernitz, Honeywell Bremsbelag GmbH

Tuesday, October 13

NVH (Part 2 of 2)

Session Code: BC101

Room Ballroom C/D

Session Time: 1:30 p.m.

The Brake NVH session includes a variety of papers covering both test and modeling activities. These publications are focused building a greater understanding of brake noise and developing means to prevent or rectify brake noise issues. The quantity and quality of papers make this one of the most important collections of publications on the topic available.

Organizers - Hidetoshi Shimizu, ADVICS North America Inc.; James K. Thompson, Bruel & Kjaer North America Inc.

Time	Paper No.	Title
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1:30 p.m.	ORAL ONLY	Development of a Numerical Model for Clunk Noise Yuuichi Koshikawa, Akebono Brake Corporation; Toshitaka Izumihara, Akebono Brake Industry Co. Inc.; Hideaki Ikeda, Akebono Engineering Center; Hisataka Naito, Akebono Brake Industry Co., Ltd.
1:55 p.m.	2009-01-3050	Impact of Mineral Fibres on Brake Squeal Occurrences Loic Mortelette, Philippe Dufrenoy, Universite Lille 1, Polytech Lille; Xavier Boidin, Yannick Desplanques, Ecole Centrale de Lille; Jean-Francois Brunel, Universite Lille 1, Polytech Lille; Luc Smeets, Lapinus Fibres BV
2:20 p.m.	2009-01-3051 ORAL ONLY	Experimental Study of Wire Brush Brake Noise on a Personal Car Eskil Lindberg, Nils-Erik Horlin, Peter Goransson, Swedith Royal Institute of Technology (KTH)
2:45 p.m.		BREAK
3:10 p.m.	2009-01-3047 CANCELLED	Validation of a Brake Liner Simulation Model using Experimental Modal Analysis Dhanushkodi D. Mariappan, Bhavani Shankar, Techpassion Technologies Pvt, Ltd.

Wednesday, October 14

Testing

Session Code: BC104

Room Ballroom A/B

Session Time: 8:00 a.m.

Testing, in its broadest sense, ranges from component validation and characterisation to full system performance evaluation. Such an approach to continuous quality assurance ensures brake engineers have confirmation that their criteria and predictions are satisfied at every level. This session brings together the full range of testing methodologies and testing procedures to address quality control at the component level yet recognises the need for global standardisation for such procedures

Organizers - Larry Bushman, Link Testing Laboratories Inc.; John D. Fieldhouse, Univ. of Huddersfield; Douglas C. Myers

Time	Paper No.	Title
8:00 a.m.	2009-01-3031	Potential for Commonization of Brake Testing for Globally Marketed Vehicles Jaroslaw Grochowicz, Tomasz Grabiec, Ford Werke GmbH
8:25 a.m.	2009-01-3027	Life Time Prediction for Brake Linings Roland Steege, Gerhard Bauer, Jurgen Lange, TMD Friction
8:50 a.m.	2009-01-3025	Test Technique and Objective Rating Method to Quantify Automotive Brake Rattle Keqin Xu, Akebono Brake Corporation
9:15 a.m.	2009-01-3034	Stability Analysis of a Disc Brake with Piezoelectric Self-Sensing Technique Marcus Neubauer, Andreas Renner Ing, Jens Twiefel, Universitat Hannover
9:40 a.m.	ORAL ONLY	Practical Considerations for Friction Materials and Brake Components of NHTSA's Recommended Best Practices to Enhance Vehicle Safety Carlos Agudelo, Link Testing Laboratories Inc.

Wednesday, October 14

Friction-Induced Vibration and Effects of Vibration on Friction (Part 1 of 2)

Session Code: BC107

10:30 a.m.

Room Ballroom A/B

Session Time:

The session addresses fundamental questions of brake noise with special focus to common needs of industry. It's part of efforts to establish a Global Net of Researchers and promote better exchange between universities and Industry. Special topics are the interaction between friction - vibration and noise/excitation, friction laws, basic questions around the physical base of modeling, desirable sophistication and pragmatic limits.

Organizers - Harald Abendroth, Consultant; Daniel P. Hess, Univ. of South Florida

Chairpersons - Harald Abendroth, Consultant; Daniel Hess, Univ of South Florida

Time	Paper No.	Title
10:30 a.m.	2009-01-3015	The Influence of Vibration on Friction Daniel P. Hess, Univ. of South Florida
10:55 a.m.	ORAL ONLY	Influence of Ultrasonic Oscillations on Static and Sliding Friction and Intrinsic Length Scale of Dry Friction Processes Valentin Popov, Tu Berlin Sekr. C8-4; Johannes Thaten, Tu Berlin Sekr. C8
11:20 a.m.	2009-01-3006	Fast Characterization of Brake Squeal Behavior Stefan Schlagner, Utz von Wagner, TU Berlin

Wednesday, October 14

Friction-Induced Vibration and Effects of Vibration on Friction (Part 2 of 2)

Session Code: BC107

Room Ballroom A/B

Session Time: 1:00 p.m.

The session addresses fundamental questions of brake noise with special focus to common needs of industry. It's part of efforts to establish a Global Net of Researchers and promote better exchange between universities and Industry. Special topics are the interaction between friction - vibration and noise/excitation, friction laws, basic questions around the physical base of modeling, desirable sophistication and pragmatic limits.

Organizers - Harald Abendroth, Consultant; Daniel P. Hess, Univ. of South Florida

Chairpersons - Daniel Hess, Univ of South Florida

Time	Paper No.	Title
1:00 p.m.	ORAL ONLY	On the Load History Dependence of Squealing Georg P. Ostermeyer, Technical Univ. of Braunschweig
1:25 p.m.	ORAL ONLY	An Investigative Journal of Brake Squeal Masaaki Nishiwaki, Teikyo University
1:50 p.m.	2009-01-3012	Discussions on Squeal Triggering Mechanisms - A Look beyond Structural Stability Li Lee, Earl Gesch, Akebono Engineering Center
2:15 p.m.		BREAK

2:30 p.m.

Panel

Friction-Induced Vibration Panel

This panel will discuss industry requirements towards interface research; impact vibr. friction - transfer laboratory findings to full scale brakes; contact and interface mecha mechanical manipulation of noise excitation; dynamic friction force variation and fricti material formulation; contributions tribology and neighboring disciplines to solve brak problems.

Moderators - Harald Abendroth, Consultant

Panelists - Jean-Francois Brunel, Polytech Lille; James W. Fash, Federal Mogul; Antoine Nehme, Peugeot Citroen Automobiles SA (invited); Georg P. Ostermeyer, Technical Univ. of Braunschweig; Seong Kwan Rhee, Hyundai Mobis; Boris A. Wernitz, Honeywell Bremsbelag GmbH;