



7th EATA 2017

International Conference on Road Materials and Pavement Design

Empa, Dübendorf, Switzerland
June 12th – 14th, 2017

Final Program

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EATA 2017
12 – 14, JUNE 2017
ZÜRICH, SWITZERLAND



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WELCOME



Welcome to the 7th EATA 2017 Conference, 12–14th June in Switzerland, hosted the first time by Empa Swiss Federal

Laboratories for Materials Science and Technology, “– The Place where Innovation Starts”. Empa is closely related to the Swiss Federal Institute of Technology (ETH), being part of the ETH domain. It is a truly interdisciplinary institution of close to 1000 scientists, engineer, technicians and general staff. Empa consists of 4 operative Departments, i.e. “Advanced Materials & Surfaces”, “Civil & Mechanical Engineering”, “Materials Meet Life” and “Mobility, Energy & Environment” where 30 laboratories work in different materials related fields for bridging the gap between science and industry. Since last year, Empa’s road research laboratory is the only remaining Swiss government lab on pavement materials research in our country.

As mentioned in our earlier announcements, the 7th EATA Conference is devoted to most recent progress in characterizing, modelling, application and development of bituminous materials and structures. This includes water and climatic effects, long term-pavement performance, cracking and fracture energy, asphalt recycling as well as special new materials and technologies. We were able to select around 30 papers for presentation that are

published in a supplement of RMPD Road Materials and Pavement Design and about the same amount that will be presented as posters, with the written text only on the EATA 2017 private website for publication reasons.

Personally, I would like to take the opportunity to thank all the authors, peer-reviewers and helpers who contributed significantly to EATA 2017. I am particularly grateful to Prof. Dr. Hervé Di Benedetto, president of EATA and co-chair of EATA 2017. Moreover, I would like to acknowledge my assistant Michèle Köhli for her commitment in all EATA 2017 related duties. She and many other colleagues will be available during the conference. Please do not hesitate to contact them if you need any help or advise.

It is my pleasure to have you all with us before my retirement in 2018. In this sense I wish you a relaxing stay with much fruitful scientific discussions. We hope that your stay in our interdisciplinary institution will be inspiring, opening your mind also to possible synergies with other materials disciplines that you might have never thought of.

A handwritten signature in blue ink, appearing to read 'M. Partl', written over a white background.

Prof. Dr. Manfred N. Partl
Chair EATA 2017

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SCIENTIFIC COMMITTEE



ORGANISATION COMMITTEE

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KEY NOTE

Title:

Fluid transport in porous asphalt and perspectives for urban heat island mitigation

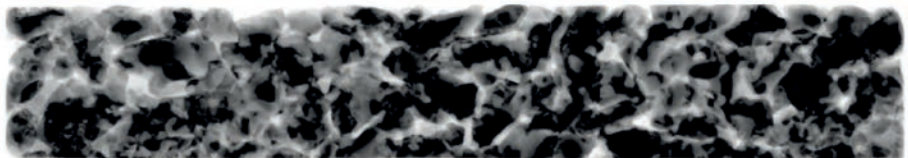
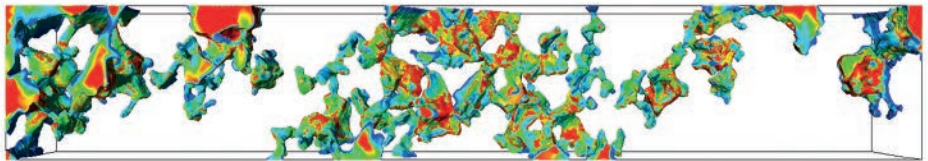
Lecturer:

Dr. Thijs Defraeye

Laboratory of Multiscale Studies in Building Physics
Empa, Dübendorf

CV:

Master, PhD and Postdoctoral fellow at KU Leuven 2006 – 2014
Since 2014 scientist at Empa and research fellow & lecturer at ETHZ



SOCIAL EVENT

EATA 2017
12 – 14, JUNE 2017
ZÜRICH, SWITZERLAND



BANQUET DINNER

For the Banquet Dinner we will crest the **top of Zurich** with the help of the Üetlibergbahn. This is the most beautiful famous view point of Zurich.



Directions to the Banquet Dinner on Tuesday, June 13th, at Uto Kulm

If you don't join the sessions in Dübendorf on Tuesday, June 13th, 2017, you don't have to come extra to Dübendorf. You can take the train **S10 at Zurich Main Station on track 22 (SZU)**, direction "Üetliberg" at **18:35** and meet us at Restaurant "Uto Kulm", Phone 044 457 66 66.

Dress code for the Banquet Dinner: Casual chic

Trains back to Zurich Main Station: 22:36, 23:06 and 23:36



SCIENTIFIC PROGRAM OVERVIEW



	12th June	13th June	14th June
7h			
8h	Welcome & Registration		
9h	Opening Session	Session 4	Session 8
10h	Key Note Lecture		
11h	Coffee	Coffee	Coffee
12h	Session 1	Session 5	Session 9
13h			Closing Session
14h	Lunch	Lunch	Lunch
15h	Posters	Posters	
16h	Session 2	Session 6	
17h	Session 3	Session 7 (Industry)	
18h	Visit Empa (optional)	Walk to Dübendorf Station & Transportation	
19h	Poster Session & Reception		
20h		Banquet	
21h			
22h			

EATA 2017 – FINAL PROGRAM

MONDAY, JUNE 12th, 2017



08:45 OPENING SESSION

Welcome addresses and Key Note Lecture

Chairman EATA 2017: Manfred Partl

Gian-Luca Bona

Director of Empa

Hervé di Benedetto

President of EATA and Co-Chair of EATA 2017

Guido Biaggio

Vice-Director of ASTRA and Head Road Infrastructure East

Felix Muff

Chief Engineer Canton Zurich

09:45 Key Note Lecture

Thijs Defraeye, Empa

10:30 Coffee

11:00 SESSION 1: Field Issues

Chair: Andreas Loizos (National Technical University of Athens)

9 **Evaluation Method of Pavement Surface Characteristics for Rolling Resistance**

Kawakami, A.; Ishigaki, T.; Shirai, Y.; Terada, M.; Kubo, K.

74 **Time-temperature superposition principle for interlayer shear strength of bituminous pavements**

Ferrotti, G.; Graziani, A.; Canestrari, F.; Cardone, F.

65 **Introducing a new method for studying the field compaction**

Ghafoori Roozbahany, E.; Partl, M.N.; Guarin, A.

131 **Influence of air voids characteristics on the hydraulic conductivity of asphalt mixture**

Aboufoul, M.; Garcia, A. (presented by Breixo Gómez Meijide)

12:45 Lunch (AKADEMIE) and Posters (NEST)

EATA 2017 – FINAL PROGRAM

MONDAY, JUNE 12th, 2017

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14:00 **SESSION 2: Recycling of Asphalt Mixtures**

Chair: Gabriele Tebaldi (University of Parma)

- 26 The rheological transformation of bitumen during the recycling of repetitively aged asphalt pavement
Makowska, M.; Aromaa, K.; Pellinen, T.
- 48 Asphalt and binder evaluation of asphalt mix with 70% Reclaimed Asphalt
Porot L., Broere D., Wistuba M., Grönniger J.
- 12 Simulating repeated recycling of hot mix asphalt
Hugener, M.; Kawakami, A.
- 108 Evaluation of the degradation of fine asphalt-aggregate mixtures containing high Reclaimed Asphalt Pavement (RAP) contents
Sánchez, D.B.; Grenfell, J.; Airey, G.; Caro, S.

15:45 Coffee

16:15 **SESSION 3: Binder Properties**

Chair: Gordon Airey (University of Nottingham)

- 47 Effect of short-term ageing temperature on bitumen properties
Hofko, B.; Cannone Falchetto, A.; Grenfell, J.; Huber, L.; Lu, X.; Porot, L.; Poulikakos, L.; You, Z.
- 121 Thermooxidative Properties of Bituminous Binders in Relation to Their Inner Chemical Compatibility Determined by Single Point Precipitation Titration
Dasek, O.; Stoklasek, S.; Coufalik, P.; Hyzl, P.; Varaus, M.
- 133 Analytical Investigation of the impact of a novel bio-based recycling agent on the colloidal stability of aged bitumen
Tabatabaee, H.A.; Kurth, T.L.

17:30 Break/Visit Empa (optional)

18:15 Poster Session (NEST) and Poster Reception (sponsored by Building Department, Canton Zurich)

EATA 2017 – FINAL PROGRAM

TUESDAY, JUNE 13th, 2017



08:45 **SESSION 4: Cyclic Loading & Healing**

Chair: Terhi Pellinen (Aalto University, Helsinki)

- 16 **Predicting Fatigue Performance of Hot Mix Asphalt using Artificial Neural Networks**
Ahmed, T.M.; Green, P.L.; Khalid, H.A. (presented by Raab, C.)
- 45 **Modeling self-heating and thixotropy phenomena under the cyclic loading of asphalt**
Riahi, E.; Allou, F.; Botella, R.; Fakhari Tehrani, F.; Dubois, F.; Absi, J.; Petit, Ch.;
Pérez-Jiménez, F.E.
- 83 **Softening and Local Self-heating of Bituminous Mixtures During Cyclic Loading**
Babadopulos, L.F.A.L.; Sauzéat, C.; Di Benedetto, H.

10:05 **Coffee and Posters**

11:00 **SESSION 5: Bitumen Testing**

Chair: Laurent Porot (Kraton)

- 76 **The odour fingerprint of bitumen**
Autelitano, F.; Garilli, E.; Pinalli, R.; Montepara, A.; Giuliani, F.
- 43 **Nano-scale Properties of Warm-Modified Bituminous Binders Determined with Atomic Force Microscopy**
Abd, D.M.; Al-Khalid, H.; Akhtar, R.
- 87 **Effect of aging on micromechanical properties of bitumen by means of atomic force microscopy**
Aguiar-Moya, J.P.; Salazar-Delgado, J.; García, A.; Baldi-Sevilla, A.; Bonilla-Mora, V.;
Loría-Salazar, L.G.
- 110 **Observation of Bitumen Microstructure Oxidation and Blending with ESEM**
Mikhailenko, P.; Khadim, H.; Baaj, H.

12:45 **Lunch (AKADEMIE) and Posters (NEST)**

EATA Steering Committee meeting (closed group, SV-Stübli)

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TUESDAY, JUNE 13th, 2017



14:00 **SESSION 6: Mechanics of Mixtures**

Chair: Michael Wistuba (Technical University Braunschweig)

- 51 **An alternative method for computing thermal stress in asphalt mixture: the Laplace transformation**
Cannone Falchetto, A.; Moon, K.H.; Wistuba, M.P.
 - 118 **Linear Visoelastic Properties of high Reclaimed Asphalt Content Mixes with Biobinders**
Jiménez del Barco Carrión, A.; Lo Presti, D.; Pouget, S.; Airey, G.; Chailleux, E.
 - 112 **Evolution of energy dissipation during four point bending of bituminous mixtures**
Remya Varma, K.R.; Padmarekha, A.; Ravindran, P.; Bahia, H.U.; Krishnan, M.J.
(presented by Tabatabaee, H.)
 - 127 **Modelling the mechanical behaviour of asphalt concrete using Perzyna viscoplastic theory and Drucker – Prager yield surface**
Ngyuen, H.T.T.
- 15:45 **Coffee**

16:15 **SESSION 7: Industry Session**

Chair: Adam Zofka (Instytut Badawczy Dróg i Mostów, Warsaw)

- 30 **Mixing Plant Design for High RAP Processing**
Demarmels, A.; Fierz, R.; Boesiger, L.
 - 53 **Field Survey Project to Identify the Important Key Factors for Long Term Durability of Asphalt Pavement on the Expressways in Japan**
Takahashi, S.
 - 123 **Improving the Quality of Bridge Asphalt Lanes with the Use of Asphalt Multi-Integrated Roller**
Abd El Halim, O.A.H.; Pinder, F.; Bashir, I.; Tayyeb, H. (presented by Raab, C.)
- 17:30 **Break and walk to Dübendorf Main Station**
- 18:00 **Guided Public Transportation to Banquet Dinner** (watch instructions by guides)
- 19:00 **Apéro**
- 20:00 **Banquet Dinner** (till approx. 22:15)

EATA 2017 – FINAL PROGRAM

WEDNESDAY, JUNE 14th, 2017

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08:45 **SESSION 8: Damage Issues**

Chair: Denis Jelagin (KTH, Stockholm)

- 57 **Reclaimed Asphalt Binders and Mortars Fatigue Behaviour**
Riccardi, Ch.; Jimenez del Barco Carrion, A.; Lo Presti, D.; Losa, M.
- 120 **Exploring the recovery of fatigue damage in bituminous mixtures at macro-crack level: the influence of temperature, time, and external loads**
Moreno-Navarro, F.; Ayar, P.; Sol-Sánchez, M.; Rubio-Gámez, M.C.
- 85 **Influence of bitumen and aggregate polarity on interfacial adhesion**
Baldi-Sevilla, A.; Montero, M.L.; Aguiar-Moya, J.P.; Loria-Salazar, L.G.; Bhasin, A.
- 86 **Effect of aggregate-bitumen compatibility on moisture susceptibility of asphalt mixtures**
Baldi-Sevilla, A.; Aguiar-Moya, J.P.; Vargas-Nordcbeck, A.; Loria-Salazar, L.G.

10:30 **Coffee**

11:00 **SESSION 9: Low Temperature Behavior**

Chair: Ronald Blab (Technical University Vienna)

- 50 **Correlation of low temperature fracture and strength properties between SCB and IDT tests using a simple 2D FEM approach**
Cannone Falchetto, A.; Moon, K.H.; Lee, C.B.; Wistuba, M.P.
- 52 **Development of a simple correlation between BBR and TSRST low temperature properties based on a simplified size effect approach**
Cannone Falchetto, A.; Moon, K.H.; Wistuba, M.P.
- 66 **Testing protocol to obtain failure properties of asphalt binders at low temperature using creep compliance and stress controlled strength test**
Marasteanu, M.; Ghosh, D.; Cannone Falchetto, A.; Turos, M.

12:15 **CLOSING SESSION**

Co-Chairman EATA 2017: Hervé di Benedetto (ENTPE, Vaulx-en-Velin)

Think about it !?

Partl, M.N.

Announcements (next EATA, Best Poster Award)

Di Benedetto, H.

12:45 **Lunch**



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AMMANN

UN LABORATOIRE DE POINTE AU SERVICE DE LA CONSTRUCTION ROUTIÈRE



Laboratoire et bâtiment administration.

Fort de 15 collaborateurs, Laboroute SA a développé une expérience solide dans trois domaines touchant la construction et le génie civil : le département béton hydraulique (pour le bâtiment et le génie civil), grave-gravier-gravillon (matière première pour béton hydraulique et béton bitumineux) et l'enrobé bitumineux (suivi de la production et mise en place) ainsi que les expertises pour ces trois départements.

Laboroute SA offre un suivi de la qualité dans ces trois départements de travaux : elle assiste à la mise en route de nouvelles installations et aide à la certification des unités de production pour matériaux de construction (centrales à béton bitumineux et béton hydraulique, gravières, carrières) et assiste les unités de production dans leur démarche de qualité desdits matériaux. Laboroute SA accompagne ses clients dans le cadre des audits pour l'obtention de la certification et du marquage CE2, conformément à l'ordonnance sur les produits de construction du 27 novembre 2000. En effet, Laboroute SA est un laboratoire accrédité selon la directive européenne ISO/CEI 17025 pour la réalisation de ces essais. Elle vérifie notamment si les qualités du béton hydraulique durci correspondent à son potentiel d'exposition futur.

Laboroute SA s'occupe de centrales à béton hydraulique et bitumineux depuis sa mise en route et a sous contrat plus de 15 unités de production. Dans ce cadre, elle travaille à la formulation, la mise au point de recettes et la certification des produits. Laboroute SA compte parmi ses clients des maîtres d'œuvre comme

l'Office fédéral des routes, les cantons de Suisse romande (de l'Arc jurassien au Valais et en passant par Genève), les communes, propriétaires de près de 70 % du réseau routier national, mais aussi quelques clients français.

À l'heure actuelle, Laboroute SA participe à plusieurs mandats de recherche nationaux : financés par l'Office fédéral des routes, ils visent l'optimisation des produits bitumineux actuellement en vigueur dans les normes (AC EME pour asphalt concrete - enrobé à module élevé). Par ailleurs, le laboratoire a mis en route un essai pour la détermination du module d'élasticité et l'essai de fatigue sur revêtement bitumineux, essai jusqu'à présent seulement réalisé à l'EPFL. Ce faisant, Laboroute SA est actuellement le seul laboratoire suisse à pouvoir analyser ces produits d'après les normes actuellement en vigueur et les qualifier au niveau de leur performance.

Laboroute SA a une succursale depuis sept ans en Valais (Steg) et a ouvert une autre succursale en 2015 à Genève Satigny. Elle ambitionne également de pouvoir répondre de plus en plus à des clients suisses allemands. Des perspectives prometteuses à l'heure où le secteur des revêtements bitumineux exige de plus en plus de solutions spéciales (solllicitations dans les giratoires, place de parcs pour camions et plateformes industrielles...) et recherche la qualité des bétons hydrauliques avec les bétons projetés et l'étude de la maturité des bétons (pour obtenir la dureté des bétons quelques heures après bétonnage)... sans oublier de garantir la qualité avec des centrales à béton foraines pour répondre à la loi sur les matériaux de construction.



Salle d'extraction avec les quatre machines de désenrobage rapide Asphaltanalisator.



Appareillage pour la détermination de l'adhésion intercouche d'enrobé bitumineux.

(Photos : © Laboroute SA)

Créée en 1961 pour étudier des recettes d'émulsion de bitume pour la construction routière pour le compte de la société Prodo, Monsieur Bernard Schmid a repris la direction de Laboroute SA avec un double objectif : diversifier les prestations fournies et garantir l'indépendance de la société.

Laboroute SA

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Anerkannte Instanz für Normierung, Forschung und Weiterbildung

Der Schweizerische Verband der Strassen- und Verkehrsfachleute (VSS) ist eine unabhängige und eigenständige Non-Profit-Organisation, die seit 104 Jahren ein nachhaltiges und sicheres Verkehrswesen in der Schweiz fördert.

- Der VSS ist ein Zusammenschluss von über 2300 Fachleuten, Firmen und Institutionen des privaten und des öffentlichen Sektors, die sich mit der Planung, der Projektierung, dem Bau, dem Betrieb, dem Unterhalt, den Baustoffen, der Nutzung und dem Rückbau von Verkehrsanlagen befassen.
- Im Auftrag des Bundes erarbeiten und betreuen die über 650 ehrenamtlich tätigen Fachleute des VSS in 95 Fachkommissionen und Arbeitsgruppen das Schweizer Normenwerk im Strassen- und Verkehrswesen.
- Der VSS initiiert, begleitet und betreut als führende Instanz jedes Jahr Forschungsprojekte und generiert neues, normativ gültiges Fachwissen für die Anwendung in der Praxis.
- Zur praxisorientierten Schulung und zur Anwendung des Normenwerks bietet der VSS in Zusammenarbeit mit Fachhochschulen anerkannte Weiterbildungen im Rahmen von CAS (Certificate of Advanced Studies), zertifizierte VSS-Kurse sowie Fachtagungen und Workshops an.

Sondernummer zu neuen Forschungserkenntnissen

Neue Publikations-Plattform für Forschende

Der VSS lanciert im Januar 2018 erstmals eine wissenschaftliche Sonderausgabe mit reviewten Fachartikeln über neue Forschungserkenntnisse zum Thema «Mobilität und Infrastruktur». Unter der Federführung des VSS-Wissenschaftsrats, der sich aus renommierten ProfessorInnen aus der Schweiz, Deutschland und Österreich zusammensetzt, werden qualitativ hochstehende und bisher unveröffentlichte Fachbeiträge von Forschenden ausgewählt und in einem Review-Verfahren nach anerkannten wissenschaftlichen Massstäben begutachtet.

Sichern Sie sich bereits jetzt gratis eine Sondernummer (falls Sie nicht schon VSS-Mitglied sind) und senden Sie Ihre Adresse per Mail an redaktion@vss.ch



VENUE / EMERGENCY INFORMATION

EATA 2017
12 – 14, JUNE 2017
ZÜRICH, SWITZERLAND



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