

# MAIREPAV9 – FINAL PROGRAM

## PROGRAM OVERVIEW



	1st July	2nd July	3rd July
9h	8h 50		50
	30	30	30
	50		
10h	<b>Welcome and Introduction</b> Christiane Raab (Mairepav9), Gian-Luca Bona (Empa), Jürg Röthlisberger (FEDRO), João Merighi (ISMArti) <i>Chair: Christiane Raab</i>		<b>Key Note 3: Kim Jenkins</b> <i>Chair: Manfred Partl</i>
	<b>Key Note 1: Tien Fang Fwa</b> <i>Chair: Manfred Partl</i>		<b>Session 9:</b> Sustainable Pavement Systems 1 <i>Chair: Manfred Partl</i>
	<b>Session 1:</b> Advanced Pavement Materials and Technologies 1 <i>Chair: Manfred Partl</i>		<b>Session 10:</b> Special Session on Maintenance Topics <i>Chair: Pietro Lura</i>
	<b>Session 2:</b> Surface Characteristics and Road Safety 1 <i>Chair: Frank Schiffmann</i>		<b>Session 11:</b> Full Scale Studies and Accelerated Pavement Testing 2 <i>Chair: Manfred Partl</i>
11h	<b>Session 3:</b> Advanced Trends in Design, Rehabilitation and Preservation 1 <i>Chair: Manfred Partl</i>		<b>Session 12:</b> Management Systems and Life Cycle Analysis 1 <i>Chair: Pietro Lura</i>
	<b>Session 4:</b> Surface Characteristics and Road Safety 2 <i>Chair: Frank Schiffmann</i>		<b>Session 13:</b> Advanced Pavement Materials and Technologies 4 <i>Chair: Manfred Partl</i>
	<b>Session 5:</b> Advanced Pavement Materials and Technologies 2 <i>Chair: Manfred Partl</i>		<b>Session 14:</b> Sustainable Pavement Systems 2 <i>Chair: Pietro Lura</i>
12h	<b>Session 6:</b> Advanced Pavement Materials and Technologies 3 <i>Chair: Françoise Beltzung</i>		<b>Session 15:</b> Evaluation of Pavement Performance 1 <i>Chair: Manfred Partl</i>
	<b>Session 7:</b> Full Scale Studies and Accelerated Pavement Testing 1 <i>Chair: Françoise Beltzung</i>		<b>Session 16:</b> Sustainable Pavement Systems 3 <i>Chair: Christiane Raab</i>
	<b>Session 8:</b> Advanced Trends in Design, Rehabilitation and Preservation 2 <i>Chair: Françoise Beltzung</i>		<b>Session 17:</b> Management Systems and Life Cycle Analysis 2 <i>Chair: Christiane Raab</i>
13h	<b>Session 9:</b> Evaluation of Pavement Performance 3 <i>Chair: Martin Hugener</i>		<b>Session 18:</b> Evaluation of Pavement Performance 2 <i>Chair: Christiane Raab</i>
	<b>Session 10:</b> Recycling and By-Products 1 <i>Chair: Martin Hugener</i>		<b>Session 19:</b> Evaluation of Pavement Performance 4 <i>Chair: Martin Hugener</i>
	<b>Session 11:</b> Evaluation of Pavement Performance 2 <i>Chair: Martin Hugener</i>		<b>Session 20:</b> Recycling and By-Products 2 <i>Chair: Martin Hugener</i>
14h	<b>Session 12:</b> Recycling and By-Products 1 <i>Chair: Martin Hugener</i>		<b>Session 21:</b> Evaluation of Pavement Performance 3 <i>Chair: Martin Hugener</i>
	<b>Session 13:</b> Evaluation of Pavement Performance 4 <i>Chair: Martin Hugener</i>		<b>Session 22:</b> Recycling and By-Products 2 <i>Chair: Martin Hugener</i>
	<b>Session 14:</b> Evaluation of Pavement Performance 1 <i>Chair: Manfred Partl</i>		<b>Session 23:</b> Advanced Pavement Materials and Technologies 5 <i>Chair: Christiane Raab</i>
15h	<b>Session 15:</b> Evaluation of Pavement Performance 2 <i>Chair: Christiane Raab</i>		<b>Session 24:</b> Advanced Pavement Materials and Technologies 6 <i>Chair: Christiane Raab</i>
	<b>Session 16:</b> Evaluation of Pavement Performance 3 <i>Chair: Christiane Raab</i>		<b>Session 25:</b> Sustainable Pavement Systems 4 <i>Chair: Christiane Raab</i>
	<b>Session 17:</b> Evaluation of Pavement Performance 4 <i>Chair: Christiane Raab</i>		<b>Adjourn</b> <i>Chair: Christiane Raab</i>
16h	<b>Session 18:</b> Evaluation of Pavement Performance 1 <i>Chair: Manfred Partl</i>		
	<b>Session 19:</b> Evaluation of Pavement Performance 2 <i>Chair: Manfred Partl</i>		
	<b>Session 20:</b> Evaluation of Pavement Performance 3 <i>Chair: Manfred Partl</i>		
17h	<b>Session 21:</b> Evaluation of Pavement Performance 4 <i>Chair: Manfred Partl</i>		
	<b>Session 22:</b> Evaluation of Pavement Performance 1 <i>Chair: Manfred Partl</i>		
	<b>Session 23:</b> Evaluation of Pavement Performance 2 <i>Chair: Manfred Partl</i>		
18h	<b>Session 24:</b> Evaluation of Pavement Performance 3 <i>Chair: Manfred Partl</i>		
	<b>Session 25:</b> Evaluation of Pavement Performance 4 <i>Chair: Manfred Partl</i>		
	<b>Apéro (for on-site participants)</b>		

# MAIREPAV9 – FINAL PROGRAM

## WEDNESDAY, JULY 1<sup>st</sup>, 2020 – MORNING



### 09:00 WELCOME AND INTRODUCTION

Prof. Christiane Raab, Chair Mairepav9

Prof. Gian-Luca Bona, CEO Swiss Federal Laboratories for Material Science and Technology (Empa)

Jürg Röthlisberger, Director Federal Roads Office (FEDRO)

Prof. João Merighi, President International Society of Maintenance and Rehabilitation of Transport Infrastructures (iSMARTi)

### 09:50 KEY NOTE 1

Dr. Tien Fang Fwa, Professor Emeritus, National University of Singapore and Distinguished Visiting Professor, Chang'an University, China

### 10:30 SESSION 1:

#### Advanced Pavement Materials and Technologies 1

- 12 Permanent Deformation Characterisation of Gap-Graded and Continuous Graded Aggregate Blends for Bituminous Mixtures

Tushara, V.T.; Krishnan, J. Murali

- 134 Effect of Global Thresholding Algorithms on Pervious Concrete Pore Network Properties using XRCT-based Digital Image Processing

Jagadeesh, Ajayshankar; Ong, Ghim Ping; Su, Yu-Min

- 162 Numerical Studies on Coir Geotextile Reinforced Flexible Pavement

Anusudha, V.; Sunitha, A.; Babu, Chithu; Bhole, Chetan R.; Mathew, Samson

### 10:30 SESSION 2:

#### Surface Characteristics and Road Safety 1

- 16 Pavement Surface Evaluation Interacting Vibration Characteristics of an Electric Mobility Scooter

Tomiya, Kazuya; Moriishi, Kazushi

- 78 LCMS-2 Measurements of the quality of road markings

Drenth, Kars; Tan, Jun Yew; Drenth, Marc; Kit, Ong Ju

- 4 Experimental investigation on the effect of rejuvenator on the high amount of recycled asphalt binder

Wang, Di; Koziel, Maximilian; Cannone Falchetto, Augusto; Riccardi, Chiara; Hugener, Martin; Porot, Laurent; Kim, Yu Sun; Goshtasp, Cheraghian; Wistuba, Michael P.

### 11:30 SESSION 3:

#### Advanced Trends in Design, Rehabilitation and Preservation 1

- 11 Influence of the Aggregate Gradation on the Rutting Resistance of Bituminous Mixtures

Abhijith, B.S.; Krishnan, J. Murali

- 68 Evaluation of warm mix asphalt produced from Iraqi materials

Mahdi, Noor J.; Abd, Duraid M.; Ahmed, M. Taher

- 79 Influence of curing on the mechanical properties of cement-bitumen treated materials using foamed bitumen: an interlaboratory test program

Pasetto, Marco; Pasquini, Emiliano; Baliello, Andrea; Raschi, Simone; Rahmanbeiki, Amir; Carter, Alan; Perraton, Daniel; Preti, Francesco; Chagas Silva Gouveia, Beatriz; Tebaldi, Gabriele; Grilli, Andrea; Dave, Eshan

### 11:30 SESSION 4:

#### Surface Characteristics and Road Safety 2

- 28 Acoustic maintenance of pavements by large scale grinding

Beltzung, Françoise; Balmer, Tobias

- 33 Framework for Pothole Detection, Quantification, and Maintenance System (PDQMS) for Smart Cities

Pavani Peraka, Naga Siva, Prapoorna Biligiri, Krishna; Kalidindi, Satyanarayana N.

- 52 Stochastic prediction of short-term-friction loss of asphalt pavements: a traffic dependent approach

Plati, Christina; Pomoni, Maria; Loizos, Andreas; Yannis, George

### 12:30 SESSION 5:

#### Advanced Pavement Materials and Technologies 2

- 62 Long lasting asphalt materials with highly modified asphaltic binder

Porot, Laurent; Jellema, Erica; Bell, David

- 65 Mechanical Properties of Bio-Asphalt on Recycled Asphalt Pavement Binder

Sihombing, Atmy Verani Rouly; Subagio, Bambang Sugeng; Hariyadi, Eri Susanto; Yamin, Anwar

- 139 Performance characteristics of nano-modified asphalt mixtures

Tsantilil, Lucia; Chiapinelli, Giuseppe; Baglieri, Orazio; Riviera, Pier Paolo; Miglietta, Fabrizio; Santagata, Ezio

# MAIREPAV9 – FINAL PROGRAM

WEDNESDAY, JULY 1<sup>st</sup>, 2020 – AFTERNOON



## 14:20 KEY NOTE 2:

Dr. Imad Al-Qadi, Professor in Engineering, University of Illinois at Urbana-Champaign, USA

## 15:00 SESSION 6:

### Advanced Pavement Materials and Technologies 3

- 91 **Low temperature behaviour of asphaltite modified binders and asphalt concretes**  
Themeli, Andrea; Chailleux, Emmanuel; Chazallon, Cyrille; Bueche, Nicolas
- 158 **Effects of binder modification on rutting performance of asphalt binders**  
Seitllari, A.; Ghazavi, M.; Kutay, M.E.
- 103 **Evaluating the properties of bioasphalt produced with bio-oil derived from biodiesel production**  
Rubens Santos, Caio Rubens; Pais, Jorge C.; Ribeiro, J.; Pereira, Paulo

## 16:00 SESSION 7:

### Full Scale Studies and Accelerated Pavement Testing 1

- 41 **Effect and implications of Different Field Compaction Methods on the Properties and Performance of Asphalt Concrete Pavements**  
Igboke, Chinecherem Agbo; Elsayed, Eslam; Hassan, Yasser; Abd el Halim, Omar Abd el Halim
- 96 **Pavement distress from channelized and lateral wandering loads using accelerated pavement tests**  
Arraigada, Martin; Partl, Manfred
- 157 **Study on the Asphalt Pavement Response in the Accelerated Pavement Testing Facility**  
Jing, Ruxin; Varveri, Aikaterini; Liu, Xueyan; Scarpas, Anastasios; Erkens, Sandra

## 17:00 SESSION 8:

### Advanced Trends in Design, Rehabilitation and Preservation 2

- 26 **Experimental Investigation of Pothole Repair Materials**  
Gosh, Debaroti; Turos, Mugur, Marasteanu, Mihai
- 141 **Laboratory tests for the characterization of cold asphalt patching mixtures**  
Riviera, Pier Paolo; Dalmazzo, Davide; Santagata, Ezio
- 159 **Performance Evaluation of Long-Life Pavements Using the Mechanistic-Empirical Asphalt Pavement Analysis (MEAPA) Web Application**  
Ghazavi, M.; Seitllari, A.; Kutay, M.E.

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## THURSDAY, JULY 2<sup>nd</sup>, 2020 – MORNING



### 08:50 KEY NOTE 3:

Dr. Kim Jenkins, Professor in Pavement Engineering, Stellenbosch University, South Africa

### 09:30 SESSION 9:

#### Sustainable Pavement Systems 1

- 66 Maximising Recycling Benefits for Sustainable Pavement Performance in New Zealand & Australia  
Browne, Allen
- 58 Performance optimization of warm recycled mixtures  
Cardone, F.; Canestrari, F.; Xiaotian, J.; Ferrotti, G.
- 63 Development of Durable Pavement in Japan  
Takahashi, Shigeki; Kanno, Shouich; Shirai, Yu;  
Yoshinaka, Tamotsu

### 09:30 SESSION 10:

#### Special Session on Maintenance Topics

- S1 Transformation of the A-VTS model to make it continuous across families of grades  
Richmond, Craig, ASTRA
- S2 Traffic areas of asphalt – seams, joints and cracks  
Gebhards, Gerhard, DENSO
- S3 Foam Bitumen Technology  
The current situation in Switzerland  
Klingels, Andreas, Gurtner Baumaschinen

### 10:30 SESSION 11:

#### Full Scale Studies and Accelerated Pavement Testing 2

- 18 Parameter identification of asphalt pavements subjected to moving loads  
Sun, Zhaojie; Kasbergen, Co; Skarpas, Athanasios;  
van Dalen, Karel N.; Anupam, Kumar; Erkens, Sandra M.J.G.
- 128 Simulating deflection of a jointed rigid pavement under rolling wheel deflectometer (RAPTOR)  
Deep, Pawan; Andersen, Mathias B.; Rasmussen, Sorensen;  
Marradi, Alessandro; Thom, Nick H.; Lo Presti, Davide
- 50 Combined effect of warm mix processes and multi-recycling on the main criteria of the French asphalt mix design  
Marsac, Paul; Petiteau, Christoph; Burban, O.; Terrir, J.P.;  
Didelet, G.; Demoncheaux, J.; Lorino, T.; Pouget, S.

### 10:30 SESSION 12:

#### Management Systems and Life Cycle Analysis 1

- 10 A Framework of Network Level Pavement Maintenance Planning for Low Volume Roads  
Pasindu, H.R.; Sandamal, R.M.K.; Perera, M.Y.I.
- 100 Decision support for new holistic Uri road asset management process  
Schiffmann, Frank; Haidjn, Rade; Seriola, Alfredo
- 148 Development of Road Maintenance Management System for India's Highway Network using HDM-4 and Genetic Programming  
Sharma, Abhishek; Chopra, Tanuj

### 11:30 SESSION 13:

#### Advanced Pavement Materials and Technologies 4

- 80 Distributed fiber optic strain measurement in an airfield pavement  
Hauswirth, D.; Fishli, F.; Rabaiotti, C.; Puzrin, A.M.
- 76 P-F curves in modelling of pavement performance  
Zofka, Adam
- 126 Correlating air freezing index and frost penetration depth – A case study for Sweden  
Erlingsson, Sigurður; Saliko, Denis

### 11:30 SESSION 14:

#### Sustainable Pavement Systems 2

- 6 Numerical evaluation of crushing resistance of unbound road material  
Olsson, Erik; Jelagin, Denis; Partl, Manfred N.
- 142 Effects of moisture and aging on asphalt binder adhesion failure using Pull-Off tension test  
Kakar, Muhammad Rafiq; Othman Hamzah, Meor;  
Raab, Christiane
- 143 Effect of addition of plastic fibres on strength characteristics of a subgrade soil  
Kaushal, Ashutosh; Patak, Rajesh; Chopra, Tanuj

### 12:30 SESSION 15:

#### Evaluation of Pavement Performance 1

- 42 Non-destructive pavement testing for sustainable road Management  
Kneib, Guido
- 56 Simulation of heavy weight deflectometer test: spectral element method vs finite element method  
Roussel, Jean-Marie; Di Benedetto, Hervé; Sauzéat, Cédric; Broutin, Michaël
- 60 Three dimensional finite element model for active crack control in continuously reinforced concrete pavement  
Kashif, M.; De Winne P.; Naseem, A.; De Backer, H.

# MAIREPAV9 – FINAL PROGRAM

## THURSDAY, JULY 2<sup>nd</sup>, 2020 – AFTERNOON



### 14:20 KEY NOTE 4:

Dr. John Harvey, Professor in Pavement Engineering, University of California Davis, USA

### 15:00 SESSION 16:

#### Sustainable Pavement Systems 3

- 5 **SENSO JOINT – An innovative sensor system for a sustainable joint design of concrete pavements**  
Recknagel, Ch.; Eng, M.; Spitzer, St.; Hoppe, J.; Eng, B.; Wenzel, N.; Pirskawetz, S.
- 9 **Developing and Modeling a Piezoelectric Energy Harvester (PEH) for Highway Pavements**  
Khalili, Mohamadreza; Ahmed, Sara; Papagiannakis, A. T.
- 82 **Laboratory Evaluation of recycled asphalt Pavement Material in warm-mix asphalt**  
Malladi, Haritha; Kusam, Abhilash; Tayebali, Akhtarhusein

### 16:00 SESSION 17:

#### Management Systems and Life Cycle Analysis 2

- 85 **Combined Life Cycle Cost Analysis and Life Cycle Assessment**  
Okte, Egemen; Al-Qadi, Imad
- 145 **Accuracy Comparisons between ASTM 1318-09 and COST-323 (European) WIM Standards using WIM Data**  
Haider, Syed W.; Masud, Muhammad Munum
- 147 **Detecting Significant Changes in Traffic Patterns for Pavement Data**  
Musunuru, Gopi K.; Haider, Syed W.; Buch, Neeraj

### 17:00 SESSION 18:

#### Evaluation of Pavement Performance 2

- 136 **Estimating of resilient modulus for fine-grained soils using ground penetrating radar**  
Tihey, Logan; Kim, Sonny S.
- 144 **Impact of Construction Practices on Air Voids and Permeability of Asphalt Mixtures**  
Haider, Syed W.; Lanotte, Michele; Malik, Khurram; Quadri, Aftab
- 163 **A Performance Prediction Model for Continuously Reinforced Concrete Pavement using Artificial Neural Network**  
Yasarer, Hakan; Oyan Najmush Sakib, Mohammad; Najjar, Yacoub

# MAIREPAV9 – FINAL PROGRAM

## FRIDAY, JULY 3<sup>rd</sup>, 2020 – MORNING



### 08:50 KEY NOTE 5:

Ezio Santagata, Professor in Pavement and Road Engineering, Polytechnical University Torino, Italy

### 09:30 SESSION 19:

#### Evaluation of Pavement Performance 3

- 45 Precision Assessment of the Modified Wheel Tracking Device on small testing of New Zealand Hot Mix Asphalt

Roy-Chowhury, Abhirup Basu; Saleh, Mafreh; Moyers-Gonzalez, Miguel

- 1 The Challenges of Warm Mix Asphalt as a Mature Technology

Jamshidi, Ali; White, Greg

- 113 Inference of Pavement Properties with Roadside Accelerometers

Nielsen, Julius; Levenberg, Eyal; Skar, Asmus

### 10:30 SESSION 20:

#### Recycling and By-Products 1

- 114 Bituminous mixtures with high environmental compatibility:

Laboratory investigation on the use of reclaimed asphalt and steel slag aggregates

Nodari, C.; Crispino, M.; Toraldo, E.

- 24 Improving the Sustainability of Semi-Dense Asphalt (SDA) Pavements by Use of Recycled Concrete Aggregates (RCA) Fractions

Mikhailenko, Peter; Kakar, Muhammad Rafiq; Piao, Zhengyin; Bueno, Moisés; Poulikakos, Lily

- 140 Performance assessment of rubberized mixtures containing reclaimed asphalt and a viscosity reduction additive

Urbano, Leonardo; Dalmazzo, Davide; Riviera, Pier Paolo; Santagata, Ezio

### 11:30 SESSION 21:

#### Evaluation of Pavement Performance 4

- 38 Shear bonding performance of reinforced asphalt pavements by using polyester grids

Leite-Gembus, Fabiana; Elsing, Andreas

- 39 4-point bending fatigue test for asphalt concrete and effect of fiberglass reinforcement on the fatigue life

Lui, G.; Koval, G.; Chazallon, Cyrill

- 115 Behaviour of the interface bonding between asphalt overlays and rigid pavements

Bayraktarova, Kristina; Dimitrov, Mariyan; Hofko, Bernhard; Eberhardsteiner, Lukas

### 12:30 SESSION 22:

#### Recycling and By-Products 2

- 20 Rubber-REOB blends as a new recycling solution for bitumen extension

Tarsi, Guila; Sangiorgi, Cesare; Varveri, Aikatarini; Rossi, Cesare Oliviero

- 105 Evaluating the Characteristics of crumb rubber modified asphalt binders produced with local bitumen

Ahmed, Taha; Bahzad, Dawoud; Al-Marshed, Abdullah, Merouani, Zein-Eddine; Omar, Mohamed

- 118 Investigation of selected properties of crumb rubber modified bitumen with different rubber content

Manthos, Evangelos; Valentin, Jan; Benesova, Lucie; Giannaka, Dimitra; Gravalas, Polichronis; Tsakalidis, Christos

# MAIREPAV9 – FINAL PROGRAM

## FRIDAY, JULY 3<sup>rd</sup>, 2020 – AFTERNOON



### 14:20 KEY NOTE 6:

Dr.-Ing. Frohmüt Wellner, Professor of Road Engineering, Technical University Dresden, Germany

### 15:00 SESSION 23:

#### Advanced Pavement Materials and Technologies 5

- 161 **Viscoelastic Response of Bitumen Emulsion Mastic with Various Active Fillers**  
Al-Mohammedawi, Ahmed; Mollenhauer, Konrad
- 3 **Influence of Source and Ageing on the Rheological Properties and Fatigue and Rutting resistance of Bitumen using a DSR**  
Rochlani, Mrinali; Leischner, Sabine; Wellner, Frohmüt
- 22 **Relating Asphalt Mixture Performance to Asphalt Mastic Rheology**  
Büchner, Johannes; Wistuba, Michael P.

### 16:00 SESSION 24:

#### Advanced Pavement Materials and Technologies 6

- 72 **The effect of fly ash-based Geopolymer on the strength of problematic subgrade soil with high CaO content**  
Kwad, Nawfal Froog; Abdulkareem, Ahmed H.; Ahmed, Taher M.
- 93 **Repeatability study on the laboratory production process of cement bitumen treated materials with foamed bitumen**  
Raschia, Simone; Rahmanbeiki, Amir; Perraton, Daniel; Carter, Alan; Graziani, Andrea; Grilli, Andrea
- 57 **Mechanical behaviour of cold recycled asphalt mixtures for binder courses produced with bitumen emulsion and high strength cement**  
Mignini, Chiara; Cardone, Fabrizio; Graziani, Andrea

### 17:00 SESSION 25:

#### Sustainable Pavement Systems 4

- 102 **Assessing self-healing asphalt by the heating of asphalt mixtures**  
Rubens Santos, Caio Rubens; Cabette, Marina; Pais, Jorge C.; Carvalho, Vitor; Pereira, Paulo
- 156 **Self-healing Asphalt for Road Pavements**  
Tabakovic, Amir; Schlangen, Eric
- 104 **Some practical inferences from modeling of asphalt pavement milling**  
Diouri, Kaoutar; Bouslham, Rajae; De, Anirbar; Hera, Adriana; El-Korchi, Tahar; Mallick, Rajib B.

### 18:00 ADJOURN