



INDOOR AIR 2016

THE 14TH INTERNATIONAL CONFERENCE
OF INDOOR AIR QUALITY AND CLIMATE

July 3-8 2016
Ghent
Belgium

Conference Proceedings

ISBN-13: 978-0-9846855-5-4



General Conference Overview

	Sunday 3/07/2016	Monday 4/07/2016	Tuesday 5/07/2016
8:30		Registration	
9:30		Opening + Awards	Keynote
10:30	Side meetings ISIAQ BOD	Poster sessions	Poster sessions
11:00	Academy meeting Indoor Air editorial board	Coffee break	Coffee break
12:30	STC Chair person meeting STC meetings	Oral sessions	Oral sessions
14:00		Lunch	Lunch
15:30		Oral sessions	Oral sessions
16:00	Registration	Coffee break	Coffee break
17:00	Registration	Poster sessions	Poster sessions
18:00		Keynote	Keynote
19:00	Reception		Conference dinner with visit Gravensteen Castle
20:00			
21:00			

Wednesday 6/07/2016	Thursday 7/07/2016	Friday 8/07/2016	
			8:30
Keynote	Keynote	Networking brunch	9:30
Poster sessions	Poster sessions	Poster sessions	10:30
Coffee break	Coffee break	Keynote Awards	11:00
Oral sessions	Oral sessions	Closing ceremony	12:30
Lunch	Lunch		14:00
Oral sessions	Oral sessions	Side meetings	15:30
Coffee break	Coffee break		16:00
Poster sessions	Poster sessions		17:00
Keynote	Keynote		18:00
Annual general meeting ISIAQ			19:00
	Conference party		20:00
			21:00

Contents

General Conference Overview.....	2
Welcome Message	5
Sponsors	7
Organisation.....	8
International Scientific Committees.....	9
Conference Structure	16
Day schedule MONDAY	26
Day schedule TUESDAY.....	73
Day schedule WEDNESDAY	119
Day schedule THURSDAY.....	169
Day schedule FRIDAY	218

Welcome Message

Welcome message from the President of Indoor Air 2016

Dear IA2016 enthusiasts,

We are pleased to welcome you to the 2016 edition of ISIAQ's flagship conference, Indoor Air, in Ghent, Belgium.

In this vibrant medieval city in the heart of Europe, a stone's throw away from Brussels, we are looking forward to a meeting that will bring together the whole indoor air and climate community. A week of networking, exchange of ideas, inspiration and above all the best and latest in indoor air sciences.

With your exceptional contributions we will match the highest standards that were set by the 13 previous editions. A top quality technical program fostering multi-disciplinary collaboration, workshops, interactive poster sessions, short courses and social media discussions will set IA2016 apart as the must see IAQ event in 2016.

You can get the latest updates by following us on twitter through @IA2016 and let us know how you are experiencing this exciting week using #IA2016. Let us know how we can help you.

And now, let's go and enjoy our bi-annual IAQ family meeting!

With best regards,

Jelle Laverge, Tunga Salthammer & Marianne Stranger

Welcome message from the President of ISIAQ

Greetings to participants of Indoor Air 2016! As President of the International Society of Indoor Air Quality and Climate (ISIAQ), I am looking forward to meeting many of you here in beautiful Ghent. I am especially grateful to the organizers: Jelle Laverge, Marianne Stranger and Tunga Salthammer. They sacrificed much time to create a program that is rich with thought-provoking presentations and workshops. I'm especially looking forward to the new style of poster sessions.

Indoor Air is the first of this conference series to occur on a two year cycle. Each Indoor Air conference helps me re-connect to the science and practice of indoor air quality and energize my creativity. I wish the same for you and for all participants. ISIAQ is a highly multidisciplinary organization that promotes the free exchange of ideas, technical expertise and scientific discovery. I hope to continue our long-standing tradition of providing members opportunities for learning from one another, developing collaborations and enlightening the world about the challenges and advances in improving indoor air quality and climate. How, you may ask, can I get more involved? Consider joining one of the ISIAQ Scientific and Technical Committees, mentor a younger ISIAQ member, or start early and plan your technical submission for next-year's Healthy Buildings conferences. Your contributions make a difference!

With best regards,

Glenn Morrison
President of ISIAQ
Missouri University of Science and Technology, USA

Sponsors

Crystalline Sponsors



Crisp Sponsors



AIRMODUS

Organisation

Core organising committee

Jelle	Laverge	Ghent University, Belgium
Marianne	Stranger	VITO, Belgium
Tunga	Salthammer	Fraunhofer, Germany
Benjamin	Hanoune	CNRS, France
Coralie	Schoemaecker	CNRS, France
Elisa	Van Kenhove	Ghent University, Belgium

Editorial team

Elisa	Van Kenhove	Ghent University, Belgium
Jelle	Laverge	Ghent University, Belgium
Marc	Delghust	Ghent University, Belgium
Peter	De Vlieger	Ghent University, Belgium

International Scientific Committee

Jiping	Zhang	Beijing University of Civil Engineering
Anani Komlavi	Afanou	STAMI
Zhengtao	Ai	The HK Polytechnic University
Takashi	Akimoto	Shibaura Institute of Technology
Brankica	Aleksic	INRA
Ricardo	Almeida	Polytechnic Institute of Viseu
Hector	Altamirano-Medina	University College London
Taha	Arghand	Technical University of Denmark
Christof	Asbach	IUTA
Kenichi	Azuma	Kinki University Faculty of Medicine
Gwi-Nam	Bae	Korea Institute of Science and Technology
William	Bahnfleth	The Pennsylvania State University
Eva	Barreira	University of Porto
Vincent	Bartolomei	CSTB
John	Bartzis	University of West Macedonia
Estelle	Baurès	EHESP
Charlene	Bayer	Georgia Tech
Gabriel	Bekö	Technical University of Denmark
Tom	Ben David	Drexel University
Chenyang	Bi	The University of Texas at Austin
Claire	Bird	Viridis Australasia P/L
Mikael	Bjorling	University of Gävle
Patrice	Blondeau	Universite de La Rochelle
Brandon	Boor	Purdue University
Catherine	Bouland	ULB
Áine	Broderick	NUI, Galway
Henrik	Brohus	Aalborg University
Stephen	Brown	CSIRO Sustainable Ecosystems
Zhongming	Bu	Chongqing University
Giorgio	Buonanno	Dept. Civil And Mechanical Engineering
Miriam	Byrne	NUI Galway
Jiao	Cai	USST
Nuno	Canha	Instituto Superior Técnico
Jianping	Cao	Tsinghua University
Shi-Jie	Cao	Soochow university
Paolo	Carrer	University of Milan
Nicola	Carlaw	The University of York
Ellison	Carter	University of Texas at Austin
João	Cavaleiro Rufo	INEGI
Ashraf	Chamseddine	American University of Beirut
Le	Chang	Tongji University
Ziguang	Chen	Beij University of Technology
Chih-Chieh	Chen	National Taiwan University
Chun	Chen	Purdue University
Bin	Chen	Dalian University of Technology
Yi	Chen	Fuzhou University

Youming	Chen	Hunan University
Yong	Cheng	Chongqing University
David	Cheong	National University of Singapore
Konstantin	Chernyi	Perm National Research Polytechnic Univ.
Dong Hee	Choi	Kyungil University
Chung Yoon	Chun	Yonsei University
Rich	Corsi	University of Texas at Austin
Cristiana	Croitoru	CAMBI Reasearch Centre
Derrick	Crump	IAQ Consulting Ltd
Peng-Yi	Cui	Tongji University
Dongjuan	Dai	Virginia Tech University
Karen	Dannemiller	Ohio State University
Sani	Dimitroulopoulou	Publis Health England
Susan	Doll	Appalachian State University
Chenqiu	Du	Chongqing University
Marzenna	Dudzinska	Lublin University of technology
Norbert	Érces	BME
Emmanuel	Essah	University of Reading
Eliani	Ezani	University of Strathclyde & University Putra Malaysia
Yunqing	Fan	Mitsubishi Electric
Guangtao	Fan	Beijing University of Technology
Lei	Fang	Technical University of Denmark
Chi	Feng	CABR
Eduardo de O.	Fernandes	University of Porto
Andrea	Ferro	Clarkson University
William	Fisk	Lawrence Berkeley National Lab
Veronika	Földváry	STU Bratislava/DTU Lyngby
Sijie	Fu	University of Nice Sophia-Anti
SC	Fu	HKUST
Elliott	Gall	Berkeley Education Alliance for research
Elliot	Gall	The University of Texas at Austin
John	Gallagher	Trinity College Dublin
Naiping	Gao	Tongji University
Kathleen	Gisser	Sherwin Williams
Yu	Gong	Tongji University
Mengyan	Gong	NIST
Nan	Gong	-
Jun	Guan	Norwegian Univ. of Science and Technology
Lars	Gunnarsen	Danish Building Research Institute
Hai	Guo	HK PolyU
Balakrishna	Gurugubelli	Acadamic
Finn	Gyntelberg	Bispebjerg University Hospital
Pamela	Harb	Ecole des Mines
Asako	Hasegawa	Kumamoto University
Kenichi	Hasegawa	Akita Prefecural University
Valeria	Hofer	TU Berlin
Andrew	Hoisington	USAF Academy
William	Hoychuk	Boeing

Cai	Hua	Tsinghua University
Kuo-Tsang	Huang	National Taiwan University
Shaodan	Huang	Tsinghua University
Walter	Hugentobler	University of Zurich
Nolwenn	Hurel	Université de Savoie - LOCIE
Julia	Hurraß	Gesundheitsamt der Stadt Köln
Ruey-Lung	Hwang	National United University
Anne	Hyvänen	THL
Piet	Jacobs	TNO
Chao	Jiang	Chang'an university
Martin	Jönsson	IKEA of Sweden
Alan	Kabanshi	University of Gävle
Naoshi	Kakitsuba	Meijo University
Targo	Kalamees	Tallinn University of Technology
Petri	Kalliomäki	Turku University of Applied Sciences
Dong Hwa	Kang	University of Seoul
Yoonkyung	Kang	Hokkaido University
Panagiota	Karava	Purdue University
Katarina	Katic	Eindhoven University of Technology
Vinita	Katiyar	IIT Delhi
Shinsuke	Kato	University of Tokyo
Sumit	Khandelwal	MNIT Jaipur
Ali	Khazraei Vizhemehr	Concordia University
Shahana	Khurshid	NIST
Sun Sook	Kim	Ajou University
Kerry	Kinney	UT Austin
Henrik	Knudsen	Aalborg University
Barbara	Koelblen	Warsaw University of Technology; Empa
Barbara	Kolarik	SBi/AAU
Jakub	Kolarik	Technical University of Denmark
Laura	Kolb	Environmental Protection Agency
Hannu	Koskela	FIOH
Stephanie	Kunkel	Illinois Institute of Technology
Takashi	Kurabuchi	Tokyo University of Science
Jarek	Kurnitski	Tallinn University of Technology
Dayi	Lai	Purdue university
Sanaz	Lakestani	Hacettepe University
Lennart	Larsson	Lund University Sweden
Borislav	Lazarov	VITO
Ching Chang	Lee	National Cheng Kung University
Kiyoung	Lee	Seoul National University
Chai-Wei	Lee	National Kaohsiung First University of Science and Technology
Victoria	Lee	Columbia University
Virpi	Leivo	Tampere University of Technology
Claire	Lepine	University of Toronto
Hanna	Leppänen	THL
Maija	Leppänen	University of Eastern Finland

Jim	Lewis	-
Hongwan	Li	University of Texas at Austin
Can	Li	Hunan University of Technology
Haoru	Li	Tsinghua University
Jingguang	Li	Shanghai Research Institute of Building Science
Nianping	Li	Hunan University
Linyan	Li	Harvard School of Public Health
Xianting	Li	Tsinghua University
Dusan	Licina	UC Berkeley
Eunsu	Lim	Toyo University
Bryan	Lingard	Dstl
Chun-Ho	Liu	University of Hong Kong
Jianlin	Liu	The Hong Kong Polytechnic University
Xiaoyu	Liu	US Environmental Protection Agency
Wei	Liu	Purdue University
Wei	Liu	USST Shanghai
Shichao	Liu	U.C. Berkeley
Zhaohui	Liu	Tongji University
Ana Flavia	Locatelli-Godoi	Universidade Federal do Parana
Irvan	Luhung	BEARS
Na	Luo	Tsinghua University
Maohui	Luo	Tsinghua University
Zhiwen	Luo	University of Reading
Joana	Madureira	INEGI
Corinne	Mandin	CSTB
Piia	Markkanen	Insinööri Studio Oy
Tero	Marttila	Tampere University of Technology
Dainius	Martuzevicius	Kaunas University of Technology
Anna	Mavrogianni	University College London
Mandana	Mazaheri	QUT
Gráinne	McGill	Glasgow School of Art
James	McGrath	NUI Galway
Lisa	Melymuk	RECETOX
Qingyu	Meng	Rutgers University
Bart	Merema	KU Leuven
Zach	Merrin	U of Illinois - ISTC
Pertti	Metiainen	Valvira
Shelly	Miller	University of Colorado
Atsushi	Mizukoshi	Kindai University
Joaquim	Monteiro	ISEP
Maria	Morandi	University of Texas
Lidia	Morawska	Queensland University of Technology
Glenn	Morrison	Missouri S&T
Alfred	Moser	Science Services
Horace	Mui	The Hong Kong Polytechnic University
Dejan	Mumovic	University College London
Alicia	Murga	Kyushu University
Yuki	Nabeshima	Toyohashi University of Technology

Kazuo	Nagano	Kyoto Prefectural University
Hiroko	Nakaoka	Chiba University
William	Nazaroff	University of California, Berkeley
Bing Feng	Ng	Nanyang Technological Uni
Lan Chi	Nguyen	InAIR Environmental Ltd
Mytien	Nguyen	Cornell University
Jako	Nice	CSIR
Nadezhda	Nikiforova	Federal Scientific Center for Medical and Preventive Health Risk Management Technologies
Anders	Nygaard	Oslo and Akershus University
Fabian	Ochs	UIBK
Bud	Offermann	Indoor Environmental Engineering
Maneerat	Ongwandee	Mahasarakham University
Inês	Paciência	Institute of Science and Innov.
Phillip	Paevere	CSIRO
Dong Yoon	Park	KAIST
Ju-Hyeong	Park	CDC/NIOSH
Pertti	Pasanen	University of Eastern Finland
Jordan	Peccia	-
Leen	Peeters	Vrije Universiteit Brussel
Yunlong	Pei	Hanyang univesity
Marco	Perino	-
Stefan	Persijn	VSL
Andrew	Persily	NIST
Robyn	Phipps	Masey University
Elena	Pieckova	Slovak Mecidal University
Zbigniew	Popiolek	Silesian University Of Technology
Dustin	Poppendieck	NIST
Sanja	Potgieter-Vermaak	Manchester Metropolitan University
Tadas	Prasauskas	Kaunas University of Technology
Nuno	Ramos	University of Porto
Gary	Raw	GR People Solutions
Jianlin	Ren	Tianjin University
Gabriel	Rojas	University of Innsbruck
Francesco	Romano	Politecnico di Milano
Jim	Rosenthal	Allergy Clean Environments
Claude Alain	Roulet	-
Hossein	Sagheby	HTW Berlin
Heidi	Salonen	Aalto University
Tunga	Salthammer	Fraunhofer WKI
Mats	Sandberg	Gavle University
Hugo	Santos	INEGI
Laura	Sariola	The Building Information Found
Lisje	Schellen	Maastricht University
Stefano	Schiavon	University of California, Berkeley
Daniel	Schmeling	German Aerospace Center
Andreas	Schütze	Saarland University
Lina	Seduikyte	Kaunas University of Technology

Chandra	Sekhar	National University of Singapore
Li	Shao	University of Reading
Momchil	Sidjimov	National Center for Public Health and Analyses
Jeffrey	Siegel	University of Toronto
Torben	Sigsgaard	Aarhus University
Michael	Sohn	Lawrence Berkeley National Lab
Luca	Stabile	DICEM - University Cassino
Brent	Stephens	IIT
Jorma	Sateri	FinSIAQ
Erica	Stewart	Kaiser Permanente
Jan	Sundell	-
Minki	Sung	Sejong University
Preeti	Sushama	Health in Slums
Mahnameh	Taheri	TU Vienna
Miyuki	Takata	Shibaura Institute of Technology
Shin-ichi	Tanabe	Waseda University
Ajay	Taneja	DR B R Ambedkar University Agra
Julian	Tang	University Hospitals Leicester
Martin	Täubel	THL
Jonathon	Taylor	University College London
Michael	Taylor	Carnegie Mellon University
Stephanie	Taylor	Harvard Medical School
Despoina	Teli	Chalmers University
Kwok Wai	Tham	National University of Singapore
Wei	Tian	University of miami
Jorn	Toftum	DTU
Anh Dung	Tran Le	Univ of Picardie Jules Verne
Marilena	Trantallidi	University of Milan
Yaw-Shyan	Tsay	National Cheng-Kung University
Kazuyo	Tsuzuki	Toyohashi tec univ
Yanagi	U	Technical University of Denmark
Erik	Uhde	Fraunhofer WKI
Susanne	Urlaub	University of Stuttgart
Maria	Valkonen	THL
Twan	Van Hooff	Leuven University
Elisa	Van Kenhove	Ghent University
Joonas	Vanhanen	Airmodus Ltd.
Gabriela	Ventura	University of Porto
Stephanie	Veselá	Eindhoven University of Technology
Michal	Vesely	TU Eindhoven
Olga	Vilanova	CIEMAT
Florentina	Villanueva	University of Castilla La Manc
Man Pun	Wan	Nanyang Technological University
Shengwei	Wang	The Hong Kong Polytechnic University
Fu-Jen	Wang	National Chin-Yi University of Techn.
Shugang	Wang	Dalian University of Technology
Sheng	Wang	Drexel University

Huan	Wang	Tsinghua University
Lina	Wang	East China University of Technology
Xinke	Wang	Xi'an Jiaotong University
Zhaojun	Wang	Harbin Institute of Technology
Jinliang	Wang	Changzhou University
Yuancheng	Wang	Shandong Jianzhu University
Pawel	Wargocki	Technical University of Denmark
Michael	Waring	Drexel University
Donald	Weekes	InAIR Environmental Ltd.
Jianjian	Wei	The University of Hong Kong
Wenjuan	Wei	CSTB
Ray	Wells	National Institute for Standards and Technology
Bengt	Wessén	Eurofins Pegasuslab
Caroline	Widdowson	Markes International
Gerhard	Wiesmueller	Public Health Dept. Cologne
Doyun	Won	National Research Council Canada
Tongling	Wu	Tsinghua University
Yan	Wu	Nanyang Technological University
Xiaojian	Xie	Nanjing Normal University
Yanan	Xu	Chongqing University
Ying	Xu	The University of Texas at Austin
Bin	Yang	Umeå University
Dong	Yang	Chongqing University
Wei	Ye	Tongji University
Sung-Jun	Yoo	Kyushu University
Hiroshi	Yoshino	Tohoku University
Ruoyu	You	Purdue University
Yongchao	Zhai	South China University of Technology
Lizhi	Zhang	South China University of Technology
Tengfei	Zhang	Duke University
Xu	Zhang	Tsinghua University
Bin	Zhao	Tsinghua University
Shouming	Zhou	-
Lingli	Zhou	Johann Wolfgang Goethe-University
Minlin	Zhu	Tsinghua University
Shengwei	Zhu	Huazhong University of Science and Technology
Hui	Zhu	University of South China
Yingxin	Zhu	Tsinghua University

Conference Structure

1	MONDAY.....	25
1.1	Opening + Awards 08:30- 09:30 UFO main auditorium ..	27
1.2	Morning posters 09:30-10:30 UFO I-VIII	29
ID52	Policy in Practise.....	30
ID117	IAQ and health effects.....	31
ID99	Thermal sensation and adaptation	32
ID116	Mould and moisture related health problems	33
ID155	Filtration.....	34
ID67	Reuse renovation.....	35
ID77	Test methods for emissions.....	36
ID81	Hospital/clean room.....	37
1.3	Morning presentations 11:00-12:30 PLA C-K.....	38
ID47	Bridging the gap between science, policy and practices (Government of Flanders - Department of Environment, Nature and Energy)	39
ID10	Reactive indoor air chemistry and health	41
ID28	Individualized thermal sensation models: missing links & solutions	42
ID42	Developing Observational Indices for Dampness and Mold to Protect Health - Towards Improving Causal Research or Towards Supporting Practice?.....	44
ID1201	Field studies of particle filtration effectiveness.....	45
ID4	Exploring issues of indoor air quality with respect to structures resultant from the design and implementation of adaptive reuse of historic structures	46
ID6	Sampling and analysis of emissions from Spray Polyurethane Foam (SPF) insulation	47
ID5	Environmental airflows and how they may lead to isolation/containment failure in critical hospital/ healthcare settings	48

1.4	Afternoon presentations 14:00 -15:30 PLA C-K.....	50
ID40	Indoor Air Quality and Related Low-Cost Solutions in School Buildings.....	51
ID1197	Indoor Surface Chemistry.....	52
ID125	STC 33 - Thermal comfort: Theory and practice	53
ID2014	E-cigarette.....	54
ID29	Indoor Environment Data Collection with Today's Technology	55
ID1203	A new standard and guideline on indoor environmental parameters for design and energy evaluations of buildings EN16798-1 and TR16789-2 (EN15251revised)	56
ID38	Indoor Emissions and Exposure	57
ID1202	Air quality in specific environments.....	58
1.5	Afternoon posters 16:00-17:00 UFO I-VIII.....	59
ID86	Primary Schools.....	60
ID70	Surfaces.....	61
ID110	Human emissions.....	62
ID63	(E)-cigarettes and 3d printers	63
ID112	IAQ measuring techniques	64
ID101	IEQ perception.....	65
ID76	Influence of ambient conditions on emissions	66
ID94	IAQ industries and various environments.....	67
1.6	Afternoon keynotes 17:00- 18:00 UFO main auditorium	68

2	TUESDAY	72
2.1	Morning keynotes 08:30-09:30 UFO main auditorium.....	74
2.2	Morning posters 09:30-10:30 UFO I-VIII	77
ID90	Museums, public and commercial buildings	78
ID71	Chemistry.....	79
ID66	IAQ modeling and bedroom IAQ.....	80
ID130	Microbiome environment interactions	81
ID65	CFD fundamental.....	82
ID119	Impact of policy, standards, protocols and awareness....	83
ID111	Particles and new pollutants	84
ID84	High school university.....	85
2.3	Morning presentations 11:00-12:30 PLA C-K.....	86
ID126	Exposure pathways.....	87
ID12	New directions in Indoor Air Chemistry: the Role of Oxidation Processes.....	88
ID23	Ventilation rate in residential and commercial buildings	89
ID31	Beneficial Microbial Exposures and Positive Building Interventions.....	90
ID27	CFD predictions of non-isothermal flow - how to minimize the user factor?.....	91
ID37	Workshop: Incorporating design for high perceived control into the design process	92
ID1198	Determining SVOC Emission Parameters from Building Materials	94
ID1200	The next steps in school IAQ.....	95
2.4	Afternoon presentations 14:00-15:30 PLA C-K.....	96
ID55	The adsorption type air cleaner VS the advanced oxidation type one such as PCO to reduce the room ventilation rate.....	97
ID13	What can we learn from indoor pollutants modeling?....	98
ID2004	Natural ventilation.....	99

ID26	Assessment and management of risk factors and adverse effects in the modern office environment	100
ID8	CFD simulation of indoor environment with focus on particle dynamics modeling	101
ID39	Hidden Connections: Building Energy Use and Indoor Air Quality	102
ID32	SVOCs in Indoor Environments: Emission, Transport, and Exposures	103
ID36	Infectious Diseases and Indoor Microorganisms in Low Income Settings.....	104
2.5	Afternoon posters 16:00-17:00 UFO I-VIII.....	105
ID108	Air cleaners	106
ID177	Emission testing	108
ID57	Configuration of ventilation systems	109
ID91	IAQ subway/train	110
ID64	CFD ventilation	111
ID106	Thermal comfort performance of HVAC	112
ID83	Kindergarten.....	113
ID50	Social houses.....	114
2.6	Afternoon keynotes 08:30-09:30 UFO main auditorium	115

3	WEDNESDAY	118
3.1	Morning keynotes 08:30-09:30 UFO main auditorium..	120
3.2	Morning posters 09:30-10:30 UFO I-VIII	122
ID58	Thermal comfort in bedrooms	123
ID93	IAQ transport.....	124
ID133	IAQ surveys and case studies.....	125
ID61	Preventive health care.....	126
ID109	Passive cleaning technology	127
ID104	Thermal comfort performance of HVAC	128
ID75	I/O models	129
ID98	Microbiology	130
3.3	Morning presentations 11:00-12:30 PLA C-K.....	131
ID2005	Perception/odors/surveys.....	132
ID2000	IAQ, ventilation and energy-efficiency in European buildings: advancing the integrated implementation of related new concepts, guidelines, standards and tools	133
ID1112	How can ventilation systems contribute to energy efficient and healthy buildings? An overview of Indoor Air Quality developments in the ventilation sector.....	134
ID46	Preventive health care in practice (Government of Flanders - Agency for Care and Health).....	135
ID43	Emissions from Building Materials into the Indoor Air. Sources and Control	136
ID11	Moving beyond Mold, Radon and ETS. How do we change the world with IAQ research?	138
ID1196	Impact of the outdoor air quality on indoor environments	139
ID22	Assessing moisture and mold in buildings in practice and the role of microbial determinations.....	141
3.4	Afternoon presentations 14:00-15:30 PLA C-K.....	143
ID35	Do healthy buildings need technology?	144
ID2016	Annex 68.....	145

ID54	Doing Ventilation Right in IAQ Studies: How to Actually Understand Your Contaminant Measurements	147
ID19	Clothing and its impact on exposure to air pollutants in indoor environments	148
ID20	Emerging Research Areas in Indoor Oxidative Chemistry	149
ID2009	Human emissions.....	150
ID48	Application and validation of models for whole building indoor-outdoor contaminant transport	151
ID34	Stratum ventilation.....	153
3.5	Afternoon posters 16:00-17:00 UFO I-VIII.....	155
ID107	Thermal comfort performance of HVAC	156
ID92	IAQ plane boat.....	157
ID151	AHU and ducts.....	158
ID60	Clothing dermal adsorption	159
ID131	Chemistry.....	160
ID102	IEQ case studies and surveys	161
ID74	I/O measurements.....	162
ID120	General IAQ case studies and surveys	163
3.6	Afternoon keynotes 17:00-18:00 UFO main auditorium	164

4	THURSDAY.....	168
4.1	Morning keynotes 08:30-09:30 UFO main auditorium...170	
4.2	Morning posters 09:30-10:30 UFO I-VIII	173
ID105	Thermal comfort performance of HVAC	174
ID121	Pollutant containmant and infiltration.....	175
ID122	Demand controlled ventilation.....	176
ID62	Pathologies.....	177
ID97	Emerging analytical tools.....	178
ID68	Low energy buldings	179
ID113	Emissions from building products.....	180
ID128	Microbiome surveys.....	181
4.3	Morning presentations 11:00-12:30 PLA C-K.....	182
ID181	Indoor environmental quality and health in green/sustainable buildings, part 1	183
ID9	Numerical simulation of indoor environment.....	184
ID41	Impact of demand controlled ventilation on indoor air quality, ventilation effectiveness and energy efficiency	185
ID15	Health impact of air pollution on sensitive groups (infants/children, elderly and asthma patients).....	187
ID45	Emerging analytical tools for the monitoring of indoor air composition.....	188
ID53	REHVA - NZEB and IAQ	189
ID2013	Building materials and references emissions.....	190
ID2010	What have we learned from studies of indoor microbiomes in different environments? (Sloan)	191
4.4	Afternoon presentations 14:00-15:30 PLA C-K.....	192
ID18	Indoor environmental quality and health in green/sustainable buildings, part 2	193
ID14	Citizen Science and Indoor Air Quality	194
ID33	The next generation of ventilation.....	196
ID24	What is the role of "health" in indoor air science?.....	198

ID1178	Changing the game in the management of Indoor Air Quality - Real time monitoring for improved health, comfort and energy efficiency.....	199
ID1182	Results from a large multidisciplinary study center; CISBO	200
ID21	Cooking and indoor air quality	201
ID2011	What have we learned from MoBE research that can actually be applied to buildings?.....	202
4.5	Afternoon posters 16:00-17:00 UFO I-VIII.....	203
ID56	Ventilation measurement technologies	204
ID73	Household activities/occupancy	205
ID124	Ventilation efficiency	207
ID82	IAQ hospital/office	209
ID78	Sensors.....	210
ID114	Emissions from consumer products.....	211
ID72	Cooking/burning.....	212
ID129	Measurement techniques and health implications.....	214
4.6	Afternoon Keynotes 17:00-18:00 UFO main auditorium	214

5	FRIDAY	217
5.1	Morning posters 09:30-10:30 UFO I-VIII	219
	ID100 Physiological responses to temperature	220
	ID154 Behaviour response.....	222
	ID85 School comfort and performance	223
	ID118 IAQ, Infection and health effects	224
	ID115 Emission modeling and case studies.....	225
	ID103 Outdoor and indoor IEQ.....	226
	ID2017 What have we learned about buildings from the application of DNA-based methods? (Sloan)	227
5.2	Morning keynotes 10:30-11:30 UFO main auditorium...228	
5.3	Closing ceremony 11:30-12:30 UFO main auditorium....231	