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CHAMPS 2017 and IEA-Annex 68 Expert Meeting

**The 14th International Forum and Workshop on Combined Heat, Air, Moisture and
Pollutant Simulations (CHAMPS)**

Tuesday 12 September 2017

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**4th Expert Meeting of the International Energy Agency Annex 68: Indoor Air Quality
Design and Control in Low Energy Residential Buildings**

11-13 September 2017

University Of Nottingham, Nottingham, UK

HOSTS

Institute for Environmental Design and Engineering (IEDE), University College London (UCL), UK

Centre for Virtual Environments, Interaction & Visualisation, University College London (UCL), UK

University Of Nottingham, UK

ORGANISERS AND CO-ORGANISERS

Syracuse University, U.S.A.

Technical University of Denmark, Denmark

TU Dresden, Germany

University Of Nottingham, UK

University College London (UCL), UK

AIMS AND SCOPE

CHAMPS 2017 will focus on major challenges facing the combined heat, air, moisture and pollutant simulations for the design and operation of sustainable buildings, highlight the most recent progresses, and identify opportunities for further collaboration in CHAMPS research, development and applications. Topics will include:

1. Whole building IEQ and energy performance: Modeling and simulation of combined heat, air, moisture, and pollutant transport processes in and around buildings, monitoring and intelligent controls;
2. Sustainable and healthy buildings: Interaction and interdependencies between IEQ and energy efficiency measures, effectiveness of source reduction, ventilation and air cleaning strategies;
3. Climate, community and site planning: Climate change effects on IEQ, urban and community planning, micro-urban climate and site impacts;
4. Building envelope performance: hygrothermal performance of buildings in different climates, leakage and moisture control, envelope-integrated ventilation and energy storage systems, energy and durability;

5. Micro-environment around occupants: demand-based personal environmental control, occupant behaviour and impacts on IEQ and energy efficiency;
6. Design studio: Methods and tools for coordinated and integrated urban and building systems design, building information modeling (BIM), CHAMPS simulation framework, software, and optimisation techniques, common databases of materials, assemblies, building topologies, climates, and real-world versus design performances.
7. Case studies: Applications of CHAMPS for building systems design and model-based predictive controls.

IEA-Annex 68 Expert Meeting will share the progress made to date in each subtask of the project, and discuss the work plan for the next steps. The meeting will include general sessions and separate working group sessions for all subtasks including:

1. Defining the metrics
2. Pollutant loads in residential buildings
3. Modeling - review, gap analysis and categorisation
4. Strategies for design and control of buildings
5. Field measurements and case studies

CHAIRS

Prof. Carsten Rode, Technical University of Denmark, Denmark

Prof. Jensen Zhang, Syracuse University, U.S.A.

Prof. John Grunewald, TU Dresden, Germany

Prof. Mike Davies, University College London, UK.

CONFERENCE STAFF

Daisy Voake, d.voake@ucl.ac.uk

Esfand Burman, esfand.burman@ucl.ac.uk

VENUE

Sustainable Research Building C10, Department of Architecture and Built Environment
The University Of Nottingham, University Park, Nottingham, NG7 2RD, UK.

(Building 17 on the enclosed map of the University Park Campus)

PROGRAMME**Monday 11 September 2017 (for Annex-68 participants and invitees):**

8:00-8:30 Registration

8:30-10:00 Annex 68 expert meeting Session 1

10:00-10:30 Coffee Break and Networking

10:30-12:00 Annex 68 expert meeting Session 2

12:00- 13:00 Lunch

13:00-15:00 Annex 68 expert meeting Session 3

15:00-15:30 Coffee Break and Networking

15:30-17:30 Annex 68 expert meeting Session 4

17:30-19:30 Welcome reception (De Vere Orchard Hotel, University of Nottingham Campus)

Tuesday 12 September 2017 (open to public):

8:30-10:00 Annex 68 General Session 1

10:00-10:20 Coffee Break and Networking

10:20-12:20 CHAMPS Session 1

12:20- 13:00 Lunch

13:00-15:00 CHAMPS Session 2

15:00-15:30 Coffee Break and Networking

15:30-17:00 CHAMPS Session 3

17:00-18:00 Annex 68 Subtask leaders meeting

18:30-20:30 Dinner, Nottingham City Centre (Annex 68 participants & CHAMPS invitees)

Wednesday 13 September 2017 (for Annex-68 participants and invitees):

8:30-12:00 Annex 68 Expert meeting (working sessions)

FOR INQUIRIES, PLEASE CONTACT

For registration and logistics:

Daisy Voake, UCL IEDE, d.voake@ucl.ac.uk

For technical programme:

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| CHAMPS 2017 Programme : Tuesday 12 September 2017 | |
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| 8:00-8:30 | Registration for CHAMPS 2017 |
| 8:30-10:00 | <p>IEA-Annex 68 General Session (Chair: Professor Jensen Zhang)</p> <p>8:30-8:45: Welcome and introduction, Professor Mike Davies, UCL Institute for Environmental Design and Engineering</p> <p>8:45-9:30: Overview of IEA-Annex 68 and progress to date, Professor Carsten Rode, Technical University of Denmark (DTU)</p> <p>9:30-10:00 Model Validation Data from the NIST Netzero Energy House, Dr Andrew Persily (National Institute of Standards and Technology, USA)</p> |
| 10:00-10:20 | Coffee Break and Networking |
| 10:20-12:20 | <p>CHAMPS Session 1 (Chair: Professor Carsten Rode)</p> <p>10:20-10:50: An overview of current state and future challenges in CHAMPS development, Professor Jensen Zhang, Syracuse University</p> <p>10:50-11:20: IBPSA-England presentation (tbc), Professor Malcolm Cook, Loughborough University</p> <p>11:20-11:50: The CRI-network model approaches to the analysis of hygrothermal and air quality of indoor panorama, Li Wang, University of Tokyo</p> <p>11:50-12:20: Using MatLab, SimuLink and Comsol as CHAMPS platform, Dr Jos van Schijndel, Eindhoven University of Technology</p> |
| 12:20-13:00 | Lunch |
| 13:00-15:00 | <p>CHAMPS Session 2 (Chair: Professor John Grunewald)</p> <p>13:00-13:30: Coupled CONTAM/EnergyPlus Modeling of the NIST Netzero Energy House, Dr Andrew Persily, NIST</p> <p>13:30-14:00: Coupled heat, moisture, and pollutant transport modelling in EnergyPlus, Dr Jonathon Taylor, University College London (UCL)</p> <p>14:00-14:30: Recent advances in TUD-IBK's simulation software Development, Dr Andreas Nicolai, TU Dresden</p> <p>14:30-15:00: Development of the TUD's Campus Energy Model, Dipl.-Ing. Dirk Weiss, TU Dresden</p> |
| 15:00-15:30 | Coffee Break and Networking |
| 15:30-17:00 | <p>CHAMPS Session 3 (Chair: Professor Mike Davies)</p> <p>15:30-16:00: Status of airflow modelling in hygrothermal simulation of the building envelope, Professor Carsten Rode, Technical University of Denmark (DTU)</p> <p>16:00-16:30: Hygrothermal material characterization, Professor John Grunewald, TU Dresden</p> <p>16:30-17:00: Hygrothermal performance of innovative green materials, Dr Menghao Qin, Technical University of Denmark (DTU)</p> |