Program
Exhaled Breath Analysis: From Sensors to Devices and Applications
October 24 - 29, 2010

Il Ciocco Hotel and Conference Center
Castelvecchio Pascoli (LU), Tuscany, Italy

Chair:
Dr. Raed A. Dweik
Cleveland Clinic, USA

Co-Chairs:
Dr. Claire Gmachl
Dr. Gary Hunter
Dr. Cristina Davis

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Joachim Pleil (USA)

Antonio Mutti (Italy)
Sunday, 24 October 2010

17:30 – 18:30  Conference Check-in
18:30 – 19:30  Welcome Reception
19:30 – 21:00  Dinner

NOTES

• Meals will be in the Dining Room.
• Social hours will typically be near the posters, unless otherwise announced.
• Audiotaping, videotaping and photography of presentations are prohibited.
• Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).
• Speakers – Please leave at least 5 minutes for questions and discussion.
• Poster Presenters – Posters will remain on view all week. Please hang your poster prior to the first poster session.
• Please do not smoke at any conference functions.
• Turn your cellular telephones to vibrate or off during technical sessions.
• Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the workshop.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:30 – 08:30</td>
<td>Breakfast</td>
</tr>
<tr>
<td>08:30 – 08:40</td>
<td><strong>Welcome and Conference Overview</strong>&lt;br&gt;Raed Dweik, Conference Chair</td>
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<td></td>
<td><strong>Welcome from ECI</strong>&lt;br&gt;Herman Bieber, Technical Liaison</td>
</tr>
<tr>
<td></td>
<td><strong>Session I: Transition from Clinical to Applied Overview</strong>&lt;br&gt;Session Chairs: Anton Amann and Terence Risby</td>
</tr>
<tr>
<td>08:40 – 09:20</td>
<td><strong>THE STATE OF BREATH ANALYSIS: ACHIEVEMENTS AND CHALLENGES</strong>&lt;br&gt;Raed Dweik, Cleveland Clinic, Cleveland OH, USA</td>
</tr>
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<td>09:20 – 10:00</td>
<td><strong>RESEARCH FIELDS INVOLVING VOLATILE COMPOUNDS: A TOUR D’HORIZON</strong>&lt;br&gt;Anton Amann, Breath Research, Institute of the Austrian Academy of Sciences, Innsbruck Medical University, Austria</td>
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<tr>
<td>10:00 – 10:30</td>
<td>Coffee break</td>
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<td>10:30 – 11:10</td>
<td><strong>BARRIERS TO OVERCOME FOR TRANSITION OF BREATH TESTS FROM RESEARCH TO ROUTINE CLINICAL PRACTICE</strong>&lt;br&gt;Anil S. Modak, Cambridge Isotope Laboratories, Inc., USA</td>
</tr>
<tr>
<td>11:10 – 11:50</td>
<td><strong>REAL TIME BREATH ANALYSIS</strong>&lt;br&gt;Terence H. Risby, Johns Hopkins University, USA</td>
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<tr>
<td>11:50 – 12:20</td>
<td><strong>PANEL DISCUSSION: TRANSITION FROM CLINICAL TO APPLIED OVERVIEW</strong></td>
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<tr>
<td>12:30 – 13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30 – 16:00</td>
<td><strong>POSTER VIEWING / ad hoc discussions / free time</strong></td>
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<tr>
<td>16:00 – 16:30</td>
<td>Afternoon coffee break</td>
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<td></td>
<td><strong>Session II: Clinical and Human Studies:</strong>&lt;br&gt;Session Chairs: Anna-Carin Olin and Raed Dweik</td>
</tr>
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<td>16:30 – 17:10</td>
<td><strong>FROM BREATH RESEARCH TO END USER</strong>&lt;br&gt;Trevor Smith, Bedfont Scientific Ltd., UK</td>
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<td>17:10 – 17:30</td>
<td><strong>SAMPLING OF PARTICLES IN EXHALED AIR – A NEW METHOD TO MONITOR CHANGES IN RESPIRATORY TRACT LINING FLUID OF THE DISTAL AIRWAYS</strong>&lt;br&gt;Anna-Carin Olin, Occupational and Environmental Medicine, University of Gothenburg, Sweden</td>
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<td>17:30 – 17:50</td>
<td><strong>ANALYSIS OF SPA IN EXHALED PARTICLES</strong>&lt;br&gt;Anna-Carin Olin, Occupational and Environmental Medicine, University of Gothenburg, Sweden</td>
</tr>
</tbody>
</table>
Monday, 25 October 2010 (continued)

18:00 – 19:00          PANEL DISCUSSION: CLINICAL AND HUMAN STUDIES
19:30 – 21:00          Dinner
21:00                    Poster Session or Social Hour
Tuesday, 26 October 2010

07:30 – 08:30 Breakfast

SESSION III: Clinical Studies and Human Studies
Session Chairs: Michael Epton, Charlene Bayer, and Antonio Mutti

08:30 – 08:50 DETECTING INFECTION FROM BREATH SAMPLES; FROM ASPERGILLUS TO TUBERCULOSIS
Michael Epton, Christchurch Hospital, New Zealand

08:50 – 09:10 TAKING SIFT-MS TO THE BEDSIDE; DEVELOPING A POINT-OF-CARE SELECTED ION FLOW TUBE – MASS SPECTROMETER FOR HUMAN BREATH TESTING
Michael Epton, Christchurch Hospital, New Zealand

09:10 – 09:40 BALANCING CLINICIAN’S ENTHUSIASM WITH THE NEED FOR ROBUST VALIDATION IN BREATH ANALYSIS
Malina K. Storer, Syft Technologies Ltd., New Zealand

09:40 – 10:10 THE POTENTIAL OF VOLATILE ANALYSES FOR LIVER DISEASE DIAGNOSES
Norman Ratcliffe, University of the West of England, UK

10:10 – 10:40 Coffee break

10:40 – 11:00 ANALYSIS OF ACETONE IN EXHALED BREATH USING A SELECTED ION FLOW TUBE-MASS SPECTROMETER SYNCHRONISED WITH A PNEUMOTACHOMETER
Jack Dummer, Canterbury Respiratory Research Group, Christchurch Hospital, New Zealand

11:00 – 11:40 PRELIMINARY STUDY ON BREATH ANALYSIS TO MEASURE HYDRATION STAT Clinical and Human Studies US
Charlene Bayer, Georgia Tech Research Center, USA

11:40 – 12:00 FROM HIGHLY SOPHISTICATED ANALYTICS TOWARDS POINT OF CARE TESTING – NEW TRENDS FOR APPLICATIONS OF BREATH MARKERS IN INTENSIVE CARE TESTING
Wolfram Miekisch, University of Rostock, Department of Anaesthesiology and Intensive Care, Germany

12:00 – 12:20 A TRACER STUDY ON REDISTRIBUTION AND OXIDIZATION OF CARBON MONOXIDE IN HUMAN BODY
Makoto Sawano, Saitama Medical University, Japan

12:20 – 12:50 PANEL DISCUSSION: CLINICAL AND HUMAN STUDIES

13:00 – 14:30 Lunch

14:30 – 16:30 POSTER VIEWING / ad hoc discussions / free time
Tuesday, 26 October 2010 (continued)

16:30 – 17:00  Afternoon coffee break

SESSION IV: Environmental / Exogenous Compounds
Session Chairs: Joachim Pleil and Terence Risby

17:00 – 17:20  BREATH GAS ANALYSIS FOR PHARMACO AND TOXICOKINETICS
Jonathan Beauchamp, Fraunhofer Institute for Process Engineering and Packaging (IVV), Germany

17:20 – 17:40  USE OF EXHALED BREATH CONDENSATE ENDPOINTS FOR EXAMINATION OF BODY MASS INDEX AS A SUSCEPTIBILITY FACTOR TO DIESEL EXHAUST
Michael Madden, U.S. Environmental Protection Agency, USA

17:40 – 18:00  HEAT MAP VISUALIZATION OF COMPLEX BREATH BIOMARKER MEASUREMENTS FOR ENVIRONMENTAL AND INTELLIGENCE APPLICATIONS
Joachim Pleil, U.S. Environmental Protection Agency, USA

18:00 – 18:30  PANEL DISCUSSION: ENVIRONMENTAL COMPOUNDS

19:30 – 21:00  Dinner

21:00 – 22:00  Poster Session and Social Hour
**Wednesday, 27 October 2010**

07:30 – 08:30  Breakfast

**SESSION V: Mass Spectrometer and Ion Mobility Mass Spectrometer**  
Session Chairs: Cristina Davis and Anton Amann

08:30 – 09:10  **MICROSCALE SENSOR COMPONENTS FOR PULMONARY DISEASE MONITORING**  
Cristina Davis, University of California, Davis, USA

09:10 – 09:30  **RAPID DETECTION AND CHARACTERIZATION OF BACTERIAL INFECTIONS USING SECONDARY ELECTROSPRAY IONIZATION MASS SPECTROMETRY (SESI-MS)**  
Jane E. Hill, University of Vermont, USA

09:30 – 09:50  **IMPROVING DATA PRECISION IN HUMAN BREATH ANALYSIS USING A NOVEL TD-GC/TOFMS ANALYZER THAT INCORPORATES QUANTITATIVE SAMPLE RECOLECTION AND CHEMOMETRIC DATA MINING**  
Nicola Watson, Markes International Ltd., UK

09:50 – 10:10  **BREATH ANALYSIS WITH PTR-MS**  
Jens Herbig, Ionimed Analytik, Austria

10:10 – 10:40  Coffee break

10:40 – 11:10  **DYNAMIC PROFILES OF VOLATILE ORGANIC COMPOUNDS (VOCs) IN EXHALED BREATH – A MODELING APPROACH**  
Julian King, Austrian Academy of Sciences

11:10 – 11:30  **BREATHSPEC©: A SENSITIVE AND SELECTIVE ANALYTICAL TOOL FOR EXHALED VOLATILE ORGANIC COMPOUNDS**  
Thomas Wortelmann, GAS mbH

11:30 – 12:40  **PANEL DISCUSSION: MASS SPECTROMETRY BASED TECHNIQUES**

12:45  Optional Excursion – Pick up boxed lunches and meet at front gates to board bus; Lunch in dining room for all others

18:00  Return from excursion

18:00  Afternoon coffee

19:30 – 21:00  Dinner

21:00  Poster Session and Social Hour
Thursday, 28 October 2010

07:30 – 08:30  Breakfast

Session VI: Sensors and Optical Based Breath Monitoring
Session Chairs: Prabir Dutta and Gary Hunter

08:30 – 09:10  STATUS REPORT ON USE OF ELECTROCHEMICAL SENSORS FOR HUMAN HEALTH BREATH MONITORING; APPLICATIONS TO NO SENSING
Prabir Dutta, The Ohio State University, USA

09:10 – 09:30  REALIZING NEW TECHNOLOGIES FOR IR SPECTROSCOPIC ANALYSIS OF BREATH
Miles J. Weida, Daylight Solutions, Inc., USA

09:30 – 09:50  DETECTION OF ACETYLENE IN HUMAN BREATH BY CAVITY RING-DOWN SPECTROSCOPY
Olavi Vaittinen, University of Helsinki, Finland

09:50 – 10:10  NEEDLETRAPH (NT) – A NEW ANALYTICAL TOOL AS AN INTERFACE BETWEEN PATIENT AND DETECTION
Phillip Trefz, University Hospital of Rostock (KAI), Germany

10:10 – 10:40  Coffee break

10:40 – 11:20  THERMALLY STABLE, SILICA DOPED wo3 FOR SENSING OF ACETONE IN THE HUMAN BREATH
Marco Righettoni, ETH Zurich, Switzerland

11:20 – 11:40  CHARACTERIZATION OF CARBON MONOXIDE ABSORBANCE IN MURINE WHOLE BLOOD BY USING A GAS CHROMATOGRAPHY WITH SEMICONDUCTOR DETACTOR
Noboru Suzuki, TAIYO CO., Ltd., Japan

11:40 – 12:00  SIMULTANEOUS MEASUREMENT OF SPIROMETRY AND AUSCULTATION USING A THIN-FILM SENSOR
C. E. Forbes, Feather Sensors, USA

12:10 – 12:30  CLINICAL STUDY OF MULTIPLE BIOMARKERS IN THE BREATH OF ASTHMA AND COPD PATIENTS USING A FULLY AUTOMATED QUANTUM CASCADE LASER SPECTROMETER
Joanne H. Shorter, Aerodyne Research, Inc., USA

12:30 – 13:00  PANEL DISCUSSION: SENSORS AND OPTICAL BASED BREATH MONITORING

13:00 – 14:30  Lunch

14:30 – 15:00  POSTER VIEWING / ad hoc discussions / free time

15:00 – 15:30  Afternoon coffee
Thursday, 28 October 2010 (continued)

Session VII: Sensor Arrays and Nanotechnology
Session Chairs: Gary Hunter and Daniel Laskowski

15:30 – 16:10
SMART SENSORS SYSTEMS FOR HUMAN HEALTH BREATH MONITORING APPLICATIONS
G. W. Hunter, NASA Glenn Research Center, USA

16:10 – 16:30
A NANOMEDICAL ARTIFICIAL OLFATORY SYSTEM FOR DETECTING VOLATILE BIOMARKERS OF CANCER
Hossam Haick, Technion – Israel Institute of Technology (Presented by Yoav Broza)

16:30 – 16:50
BREATH ANALYSIS SYSTEM BASED ON PHASE-SHIFTING INTERFEROMETRIC MICROSCOPY (PSIM) READOUT OF MICROCANTILEVER ARRAYS
Sven Kelling, University of Cambridge, UK

16:50 – 17:20
ELECTROCHEMICAL SENSORS FOR THE DETECTION OF AMMONIA IN BREATH
Troy Hibbard (Presenter on behalf of Tony Killard), Biomedical Diagnostics Institute, Dublin City University, Ireland

17:20 – 17:30
Stretch Break

17:30 – 17:50
RECENT ADVANCES IN EXHALED BREATH ANALYSIS USING ION MOBILITY SPECTROMETRY
Chandrasekhar Hariharan, Leibniz- Insitut für Analytische Wissenschaft- ISAS e.V., Dortmund, Germany

17:50 – 18:10
CHEMOSENSOR ARRAYS-BASED BREATH ANALYSIS DEVICES FOR DISEASE MONITORING
Perena Gouma, SUNY Stony Brook, USA

18:10 – 18:30
ELECTROCHEMICAL SENSORS FOR THE DETECTION OF AMMONIA IN BREATH
Tony Killard, Dublin City University, Ireland (Presented by Troy Hibbard)

18:30 – 18:50
EXPLOITING THE ODOR SIGNATURE: BIOMARKER DISCOVERY AND SENSOR DESIGN
Ryan Kramer, Air Force Research Laboratory 711th HPW/RHPCB, USA

18:50 – 19:10
EXHALED BREATH SMELLPRINT IS ALTERED IN PREGNANCY
Andras Bikov, Semmelweis University, Department of Pulmonology

19:10 – 19:30
Free-time

20:00
Conference Dinner
Friday, 29 October 2010

07:30 – 08:30  Breakfast
08:30 – 09:00  PANEL DISCUSSION: SENSOR BASED SYSTEMS
09:00 – 09:30  SUMMARY PANEL DISCUSSION
09:30 – 10:00  Closing Remarks
LIST OF POSTERS

1. EXHALED BREATH ANALYSIS OF PATIENTS WITH PULMONARY HYPERTENSION USING SELECTED ION FLOW TUBE MASS SPECTROMETRY (SIFT-MS)
   Kelly Paschke, Cleveland Clinic, USA

2. EXHALED BREATH ANALYSIS IN LIVER DISEASE USING SELECTED ION FLOW TUBE MASS SPECTROMETRY (SIFT-MS)
   David Grove, Cleveland Clinic, USA

3. CHANGE IN EXHALED NITRIC OXIDE LEVELS AFTER SLEEP IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA CORRELATES WITH OSA SEVERITY
   Ai-Ping Chua, Cleveland Clinic, USA (Presented by Kelly Paschke)

4. EFFECT OF INFLUENZA A (H1N1) LIVE ATTENUATED INTRANASAL VACCINATION ON EXHALED NITRIC OXIDE (NO) IN HEALTHY ADULT HEALTHCARE WORKERS
   Alquam Mashir, Cleveland Clinic, USA

5. MULTIVARIATE SCREENING OF EXHALED ENDOGENOUS PARTICLES FROM SUBJECTS WITH ASTHMA AND HEALTHY CONTROLS
   Ann-Charlotte Almstrand, University of Gothenburg, Sweden

6. MICROFABRICATION OF NASICON BASED NOX SENSOR
   Chung-Chiun Liu, Case Western Reserve University (Presented by Gary Hunter), USA

7. CORRELATIONS BETWEEN CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS IN SALIVA AND EXHALED AIR AND THEIR DEPENDENCE ON AGE AND BODY MASS INDEX OF SUBJECTS
   Elena Shnayder, Siberian Branch of Russian Academy of Science, Russia

8. A BREATH MARKER FOR THE STATUS OF UREMIA BY PTR-MS
   Ingrid Kohl, Ionimed Analytik GmbH, Austria

9. A PRELIMINARY STUDY ON THE INFLUENCE OF AEROBIC EXERCISES ON BREATH ACETONE
   Koichiro Nagamine, Nagoya University, Japan

10. CHEMO-RESISTIVE GAS SENSORS FOR EASY DIAGNOSIS OF DIABETES BY BREATH ANALYSIS
    Marco Righettoni, ETH Zurich, Switzerland

11. BREATH ANALYSIS FOR EARLY DETECTION IN VENTILATOR ASSOCIATED PNEUMONIA USING GAS CHROMATOGRAPHY TIME-OF-FLIGHT MASS SPECTROMETRY (GC-TOF/MS)
    Maria Basanta, University of Manchester, United Kingdom (UK) (Presented by Stephen Fowler)

12. PROFILING OXIDATIVE STRESS MARKERS IN ALLERGIC ASTHMA BY ANALYSIS OF EXHALED BREATH USING COMPREHENSIVE TWO DIMENSIONAL CHROMATOGRAPHY
    Michael Caldeira, Universidade de Aveiro, Portugal

13. EFFECT OF DATES SOLUTION ON HALITOSIS
    Nathanael O Salako, Kuwait University, Kuwait

14. A NEW PORTABLE BREATH HYDROGEN ANALYZER AND ITS CLINICAL APPLICATION
    Noboru Suzuki, TAIYO CO., Ltd., Japan
15. BREATH ANALYSIS BY SNO$_2$-BASED GAS SENSOR MICROARRAY: AN EXPLORATIVE STUDY OF SMOKING STATUS RISK
   Simonetta Capone, CNR-IMM, Italy

16. BREATHSPEC: SENSITIVE AND SELECTIVE TOOL FOR ANALYSIS OF EXHALED VOLATILE ORGANIC COMPOUNDS
   V. Ruzsanyi, G.A.S. Gesellschaft für analytische Sensorsysteme mbH, Germany

17. MONITORING CANCER TREATMENT VIA EXHALED BREATHE
   Yoav Y Broza, The Technion, Haifa, Israel