

# Programme of the Conference

## “Breath Gas Analysis for Medical Diagnostics”

Vorarlberg University of Applied Sciences, Dornbirn

September 23<sup>rd</sup> to 26<sup>th</sup>, 2004

Thursday, Sept 23<sup>rd</sup>

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8:00      **Registration**

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8:45      **Welcome address** by Oskar Müller and Anton Amann

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### **Mass spectrometric techniques for breath gas analysis**

*Chairman:* Tilmann Märk

9:00      Michael Phillips: “*Methods in breath testing*”

9:30      Armin Hansel and Armin Wisthaler: “*PTR-MS; a new tool for the rapid detection and quantification of VOCs in air at ultra-trace levels*”

10:00     Patrik Španěl: “*Selected ion flow tube mass spectrometry, SIFT-MS: accurate absolute quantification of metabolites in breath*”

10:30     Ingo Baumbach: “*Detection of Metabolites in Human Breath: Ion Mobility Spectrometers as Diagnostic Tools for Lung Diseases*”

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11:00     *Coffee break*

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### **Spectroscopic and other techniques for breath gas analysis**

*Chairman:* Lars Gustafsson

11:30     Manfred Mürtz: “*Laserspectroscopic online monitoring of exhaled trace gases*”

12:00     Gerald Wysocki: “*Exhaled human breath analysis by means of quantum cascade laser based gas sensors*”

### **New techniques for breath gas analysis (two parallel sessions)**

*Chairman:* Michael Phillips

12:30     Jörg Lauenstein: “*Isotope selective detection of nitric oxide in human exhalation*”

*Chairman:* Ingo Baumbach

Claudio Perret: “*Validation of a new portable telemetric-ergospirometric device during exercise*”

12:50 Andrew Ellis: *“PTR time-of-flight mass spectrometry: a good prospect for diagnostic breath analysis?”* Wolfgang Miekisch: *“Out of breath – analysis of volatile organic breath markers -pitfalls, tips and tricks”*

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13:20 *Lunch*

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14.20 **Panel discussion:** *Is it time for establishing an "International Society for Breath Diagnostic Research"?*

*Chairman and discussion moderator:* Ulrich Müller-Herold

*Participants:* A Amann, R Dweik, L Gustafsson, A Lindstrom, N Marczin, J Lundberg, W Miekisch, M Mürtz, M Phillips, J Pleil, T Risby, G Rolla, J Schubert, D Smith

**Some points and questions for this panel discussion:**

# Are there (potentially) enough interested people to keep such a society running?

# What contacts would there be to other societies, like ORCA (European organisation for Caries Research), European Thoracic Society, International Society for Breath Odor Research, etc.

# How could one optimize the benefits of cross-fertilisation of ideas from related areas?

# Could breath tests (say in the next two decades) become an integral part of medicine and dentistry (as well as other fields), in a broadly analogous way to blood tests in hospitals?

# Should such a society concentrate on breath, OR would it be more appropriate to include blood and urine headspace also?

# Who are the persons who could be sufficiently involved to give the society a flying start and maintain the momentum when the society is formed? Should a working group be formed to gauge interest? (it would be disastrous if interest was lost soon after its formation)

# Who could potentially sponsor such a society?

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15.30 *Coffee break*

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**Breath gas analysis and physiology**

*Chairman:* Raed A. Dweik

16:00 Lars Gustafsson: *“Exhaled NO: how and why we know it is important”*

16:30 Jon Lundberg: *“Diagnostic use of a nasal NO test”*

17:00 Andrew Lindstrom: *“The use of exhaled breath analysis in human exposure assessment studies”*

17:30 Joach Pleil: *“The unique value of breath biomarkers for estimating pharmacokinetic rate constants and body burden from random/intermittent dose”*

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## Poster session A

Poster organizer: Manfred Mürtz

- 18:00-  
19:00
- T Birken, B Brock, JK Schubert: *“A standardized CO<sub>2</sub> controlled alveolar breath sampling technique”*
- U Janovsky, S Scholl-Bürgi, DB Skladal, G Poupart, A Schmid, A Amann: *“Breath gas analysis in paediatric patients with propionic acidaemia”*
- N Lalic, A Schmid: *“Quality control in Tedlar bag PTR-MS measurements”*
- MJ McEwan, Jennifer M Scotter, VS Langford, PF Wilson and ST Chambers: *“Real-time detection of common microbial volatile organic compounds (VOCs) from medically important fungi by SIFT-MS”*
- R Bloor, TS Wang, P Španěl, D Smith: *“Applications of selected ion flow tube mass spectrometry (SIFT-MS) in addiction research”*
- A Cathcart, CA Wyse, PS Yam, SA Ward, MJ Padgett and KS Skeldon: *“The effect of maximal exercise on exhaled CO and ethane in human and animal athletes”*
- M Basanta, T Koimtsiz and CL Paul Thomas: *“Protocol for producing an ion mobility spectrometry library of VOC in human breath”*
- V Gufler and M Ledochowski: *“Breath gas analysis in patients with malabsorption syndroms”*
- V Gufler and M Ledochowski: *“Breath tests in gastroenterological practice – carbohydrate malabsorption”*
- Mona Lärstad: *“Are ethane, pentane and isoprene produced locally in the airways? – a methodological study”*
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Dinner at Hotel Krone at 19.30

Remark: beverages are not included

# Friday, Sept 24<sup>th</sup>

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## **Breath gas analysis for diagnostics and therapy**

Chairman: David Smith

- 8:00 Jochen Schubert: *"The background dilemma - influence of inhaled substance on the results of breath analysis"*
- 8:30 Keary Cope: *"Lung cancer breath biomarkers"*
- 9:00 Stefan Ryter and Augustine Choi: *"Can inhaled CO be a therapeutic modality in human diseases"*
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## **Poster session B**

Poster organizers: Giovanni Rolla and Joach Pleil

- 9:30-10:30 GV Kamarchuk, OP Pospyelov, AV Yeremenko, EG Kushch, LV Kamarchuk: *"Selectivity of sensor response to the breath gas components as a method of noninvasive diagnostics of human diseases"*
- OP Pospyelov, GV Kamarchuk, YL Alexandrov, AV Kravchenko, E Faulques: *"TCNQ derivatives-based sensors for exhaled breath analysis"*
- A Malinovschi, C Janson, T Holmkvist, P Meriläinen, M Högman: *"Exhaled nitric oxide levels in relation to allergic sensitisation"*
- JB Mei, GA Reineccius, WB Knighton, EP Grimsrud, and T Krick: *"Comparison of linear response in the detection of aroma compounds by APCI-MS and PTR-MS"*
- H Oser, S E Young, and MJ Coggiola: *"Breath analysis using photoionization mass spectrometry"*
- S Prettin, K Roecker and S Sorichter: *"Automated and intra-breath shape analyses of expirograms on a breath-by-breath-basis - potential for diagnostic applications"*
- SM Cristescu, BWM Moeskops, AKY Ngai, FJM Harren: *"Sensitive monitoring of the UV-induced lipid peroxidation in human breath"*
- T Hemmingsson, D Linnarsson, R Gambert: *"Novel hand-held device for exhaled NO-analysis in research and clinical applications"*
- A Grundmann, J Nolte: *"Breath analysis by on-line TDS/GC/MS"*
- JI Baumbach, V Ruzsanyi, S Sielemann, A Tappe: *"Rapid 3D - spectra classification, identification and quantification of gaseous metabolites in human breath using ion mobility spectrometers"*
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10:30 Coffee break

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## Current topics in breath gas analysis (two parallel sessions)

Chairman: Patrik Španěl

Chairman: Andrew Lindstrom

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|-------|---|--|
| 11:00 | Cathy Wyse: <i>“Potential application of breath analysis in veterinary medicine”</i>  | Gunther Becher: <i>“Exhaled Breath Condensate (EBC) alternative or additional diagnostic procedure?”</i>                                       |
| 11:20 | Petra Reinhold: <i>“Potential for and limitations of exhaled breath analysis in large animal models”</i>  | Hans-Jürgen Smith: <i>“Capnography in the evaluation of pulmonary emphysema”</i>   |
| 11:40 | Caterina Bucca: <i>“Exhaled nitric oxide and pulmonary complications after allogeneic stem cell transplantation”</i>                            | Caroline Penault: <i>“Detection of H.pylori infection by breath ammonia following urea ingestion”</i>  |
| 12:00 | Tianshu Wang: <i>“A comparative study of breath ethanol and HDO using SIFT-MS and FA-MS: ethanol metabolism and total body water”</i>           | Marianne Högman: <i>“Extended NO analysis in a random sample population”</i>   |
| 12:20 | Norman Ratcliffe: <i>“Rapid diagnosis of gastrointestinal conditions from faecal volatiles”</i>   | Khaled Ismail: <i>“Increase of acetone in urine headspace; a potential indicator of ovulation”</i>   |
| 12:40 | Susanne Teschl: <i>“A model of the human cardiovascular-respiratory control system”</i>   | Bart Knols: <i>“Breath gas analysis and vector-borne disease diagnosis”</i>  |
| 13:00 | Anil Modak and Yasuhisa Kurogi: <i>“Detection of <sup>13</sup>CO<sub>2</sub> for diagnostic non-invasive breath tests with stable isotopes”</i> | Claire Turner: <i>“Analysis of breath using SIFT-MS: a comparison of breath profiles of healthy volunteers and seriously ill ICU patients”</i> |

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13:20 *Lunch*

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14:20 *Visit to Rolls-Royce Museum and High Tea there at 15:30*

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## Breath gas analysis in real time (at Rolls-Royce museum)

Chairman: Jochen Schubert

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| 16:00 | David Smith: <i>“Applications of SIFT-MS in physiology, clinical diagnostics and therapeutic monitoring”</i> |
| 16:30 | Anton Amann: <i>“Breath gas analysis as a biochemical probe in the sleep laboratory”</i>                     |
| 17:00 | Terence Risby: <i>“Effects of ventilation on the collection of exhaled breath in humans”</i>                 |

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## 17:30 Presentation (at Rolls-Royce museum)

John Vaughan: *“Practical applications for exhaled breath condensate pH”*

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Buffet at Rolls-Royce Museum at 18:15

## Saturday, Sept 25<sup>th</sup>

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### **Clinical breath gas analysis**

*Chairman:* Heinz Drexel

- 9:00 Terence Risby: *"In vivo assessments of injury and disease based on breath"*
- 10:00 Michael Phillips: *"Breath volatiles - making sense of the data: Screening for cancer and other diseases"*
- 11:00 Maximilian Ledochowski: *"Breath gas analysis in patients with malabsorption syndrome"*
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11:50 ***Bernhard Lang Award Ceremony for the best poster and best short oral presentation***

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12:00 *Lunch*

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### **Clinical breath gas analysis (continued)**

*Chairman:* Anton Amann

- 13:30 Jochen Schubert: *"VOC breath markers in critically ill patients - potential and limitations"*
- 14:30 Raed A. Dweik: *"Nitric oxide in exhaled breath: a window on lung physiology and pulmonary disease"*
- 15:20 *Coffee break*
- 16:00 Nándor Marczin: *"Diagnostic aspects of exhaled nitric oxide and carbon monoxide in cardiothoracic anaesthesia"*
- 17:00 Giovanni Rolla: *"Exhaled nitric oxide in hepatopulmonary syndrome"*
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**Important notice.** There is a bus transfer to the conference banquet venue: please gather at the designated meeting point at 19:15! The conference banquet starts at 20:00 at the restaurants "Altes Gericht" and "Torgel" in Sulz.

## Sunday, Sept 26<sup>th</sup>

**9:35**      **Please gather at the designated meeting point at 9:35**  
Bus transfer from Dornbirn to **Andelsbuch** (Bregenzerwald)

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Lectures at the "Gemeindesaal Andelsbuch"

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### **Novel approaches to breath gas analysis**

*Chairman:* Nándor Marczin

- 10:30      Frank Kühnemann: *"A breath test for plants: photoacoustic trace gas analysis and its application in plant science"*
- 11:00      Patrik Španěl and David Smith: *Flowing afterglow mass spectrometry, FA-MS, measurements of deuterium abundance in the water vapour in exhaled breath and above aqueous liquids; determination of total body water*
- 11:30      Jochen Schubert: *"New approaches to the analysis of small hydrocarbons in exhaled breath: Breath test for the monitoring of ischemia-reperfusion injuries "*
- 12:00      *Final Remarks:* Anton Amann and David Smith
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12:15      Invited lunch

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- 13:30      Walk from Andelsbuch to Bersbuch
- 14:35      Nostalgic train trip from Bersbuch to Bezau
- 15:30      Farewell and transfer to Dornbirn arriving at 16.15