



The National
Academies of
SCIENCES
ENGINEERING
MEDICINE



International Workshop on Innovative Technologies for Chemical Security

WORKSHOP PROGRAMME

Monday, 3 July 2017

7:15 Buses depart from hotel for BRAZILIAN ACADEMY OF SCIENCES

7:30 – 8:30 Late Registration, BRAZILIAN ACADEMY OF SCIENCES
Coffee & Tea and Exhibition available

8:30 **Plenary Session 1:** Overview and Background
Chair: **Mark Cesa**, Past President, International Union of Pure and Applied Chemistry

Speakers:

- Workshop Welcome
 - **Christopher Timperley**, Chairperson, Organisation for the Prohibition of Chemical Weapons, Scientific Advisory Board
- Brazil Academy of Sciences and Brazilian Chemistry Society
 - **Luiz Davidovich**, President of Brazil Academy of Sciences
 - **Aldo Zarbin**, President of Brazilian Chemistry Society
- Emerging technologies and the Chemical Weapons Convention – science and technology review for the Fourth Review Conference
 - **Jonathan Forman**, Science Policy Adviser, Organisation for the Prohibition of Chemical Weapons
- Emerging Technologies and the Implementation of the Chemical Weapons Convention
 - Contingency operations - challenges for OPCW inspectors; **Katarina Grolmusova**, Chemical Weapons Inspector, Organisation for the Prohibition of Chemical Weapons
 - Aerial Platforms for Reconnaissance, Sample Planning and Basic Detection; **Guy Valente**, Assistance and Protection Branch, Organisation for the Prohibition of Chemical Weapons

10:45 **Coffee & Tea and Exhibition**

11:00 **Plenary Session 2:** Recognizing Biochemical Change: *If plants could talk*
Chair: **Greg McCarty**, USDA-ARS Hydrology & Remote Sensing Laboratory, United States

Speakers:

- Technologies being adopted for precision agriculture and their potential applications
 - **Ricardo Inamasu**, Embrapa Labex, Brazil

- Optical sensors for the detection of biophysical and biochemical changes of plants: Case studies from plant-pathogen interactions
 - **Matheus Kuska**, University of Bonn, Bonn, Germany
- Remote Sensing of Terrestrial Ecosystems
 - **Greg McCarty**, USDA-ARS Hydrology & Remote Sensing Laboratory, United States

12:30 **Discussion**

13:00 **Lunch**

14:00 **Plenary Session 2:** Recognizing Biochemical Change: *Large scale environmental monitoring*

Chair: Ahmed Saeed (OPCW SAB)

Speakers:

- Data Fusion – Satellites and Dispersion Models: *The 2016 Al-Mishraq Sulphur Plant Fire*
 - **Oscar Björnham**, FOI Sweden
- Promise of large-scale sensor networks and big data to measure and manage our environment
 - **Melissa Lunden**, Aclima, United States

15:00 **Discussion**

15:30 **Plenary Session 2:** Recognizing Biochemical Change: *Chemical Sensing*

Chair: Veronica Borrett (OPCW SAB)

Speakers:

- Targeted catalytic degradation of organophosphates: pursuing sensors
 - **Elisa Orth**, Federal University of Parana, Brazil
- Multisensor Systems (E-nose) for toxic gases detection and biomedical applications
 - **Cristhian Manuel Durán Acevedo**, Universidad De Pamplona, Colombia

16:30 **Discussion**

17:00 **Adjourn Day 1**

Welcome reception at Brazilian Academy of Sciences

19:00 Buses depart from BRAZILIAN ACADEMY OF SCIENCES to hotel

Tuesday, 4 July, 2017

7:30 Buses depart from hotel for BRAZILIAN ACADEMY OF SCIENCES

8:30 **Welcome to Day 2**
Coffee & Tea and Exhibition available

8:45 **Plenary Session 3: Mobile and Wearable Technologies and Point of Care Devices**
Chair: Evandro de Souza Nogueira (OPCW SAB)

Speakers:

- Flexible, foldable, and wearable paper-based electronics and electrochemical devices
 - **Murilo Santhiago**, Instituto de Química, Brazil
- Wearable Technology for Chem/Bio: Existing and Emerging Capabilities
 - **Richard Ozanich**, Pacific Northwest National Laboratory, United States

9:45 **Discussion**

10:15 **Plenary Session 4: Digital Health**
Chair: Ponnadurai Ramasami (OPCW SAB)

Speakers:

- Digital Health: What You Can Learn From Your Smartwatch
 - **Xiao Li**, Stanford University, United States
- Understanding Smart Data Collection Vs Big Data Collection And How To Focus AI Analysis.
 - **George Harris**, Basil Leaf Technologies

11:15 **Discussion**

11:45 **Lunch**

12:30 **Plenary Session 5: Collecting data in remote and dangerous environments**
Chair: Cheng Tang (OPCW SAB)

Speakers:

- Unmanned Airborne Mass Spectrometer System (UAS-MS) for Autonomous *In Situ* Chemical Measurements under Harsh Environment Conditions
 - **Jorge Diaz**, University of Costa Rica, Costa Rica
- Collection and Processing of Biological Samples in Remote and Dangerous Places; the ESP as a Case Study
 - **Jim Birch**, Monterey Bay Aquarium Research Institute, United States
- Modular robotic toolbox for counter-CBRN support
 - **Grzegorz Kowalski**, Industrial Research Institute for Automation and Measurements PIAP, Poland

- Unmanned Aerial Vehicle Equipped With Cbrn Dim Capability To Enhance The Chemical Awareness
 - **Marcel van der Schans**, TNO CBRN-DIM UAV

14:30 **Discussion**

15:00 **Coffee & Tea and Exhibition**

15:30 **Plenary Session 6:** International Monitoring
Chair: Farhat Waqar (OPCW SAB)

Speakers:

- Monitoring Networks tracking biogeochemical changes in coastal and maritime environments from Argentina
 - **Andrés Arias**, Instituto Argentino de Oceanografía, Argentina
- Remote Sensing and Open-Source Research for Nonproliferation Analysis: Case Studies from the MIIS Center for Nonproliferation Studies
 - **Catherine Dill**, Middlebury Institute of International Studies at Monterey, United States

16:30 **Discussion**

17:00 **Plenary Session 7:** Computer Aided Engineering Tools Applied to Chemical Weapons Convention implementation

- **Evandro de Souza Nogueira**, OPCW SAB

17:30 **Adjourn Day 2**

17:45 Buses depart from BRAZILIAN ACADEMY OF SCIENCES for dinner

18:15 **Dinner at Hotel**

Wednesday, 5 July, 2017

7:30 Buses depart from hotel for BRAZILIAN ACADEMY OF SCIENCES

8:30 **Welcome to Day 3**
Coffee & Tea and Exhibition available

8:45 **Breakout Discussion Sessions (in parallel)**

Topics:

- 1) Enhancing the capabilities of inspectors (Moderator: Cheng Tang, OPCW SAB)
- 2) Standoff detection and early warning systems (Moderator, Francois van Straten, OPCW SAB)
- 3) Collecting and integrating data streams – is there a need in implementation of the Convention? (Moderator: David Gonzalez, OPCW SAB)
- 4) Opportunities for new technologies in Chemical Weapons Convention Implementation (Moderator: Jonathan Forman, OPCW)

10:15 **Coffee & Tea and Exhibition**

10:30 **Plenary Session 8:** Reporting from Breakout Sessions
Chair: Christopher Timperley (OPCW SAB)

11:15 **Closing Remarks and Recap of Days 1 and 2**

12:00 **Final Lunch and Meeting Adjourn**

Closed session for committee writing
Coffee and Tea will be available

13:00 Compiling all abstracts of talks with additional notes or recommendations from SAB

16:00 Adjourn Closed Session