

IEEE P2520.2.1
Machine Olfaction Devices and Systems used for General Outdoor Odor
Monitoring
(SEN/SC/TMODS/OOM/2520.2.1)

Working Group Meeting Minutes
19 September 2022 / 10:00 AM – 11:00 AM (EDT)
WG Chair: Ehsan Danesh
WG Secretary: Cynthia Burham

1. Call to Order

The Chair called the meeting to order at (10:05) AM EDT. The Chair also announced that the meeting was being recorded for the purpose of preparing minutes.

2. Roll Call and Disclosure of Affiliation

Affiliation FAQs: <http://standards.ieee.org/faqs/affiliation.html>

The Chair directed participants to a Google Docs link in the Chat window:

https://docs.google.com/spreadsheets/d/1ydvTFKxRSYRpT1CX-22zaNkETV4_aqD2NDVSoxxfk8/edit?usp=sharing

Participants were asked to register for the meeting by placing an X at the intersection between the row including their name and the column including the meeting date. First-time participants and individuals whose information was not already listed within the Google document were instructed to include their name, affiliation and status under the appropriate columns at the bottom of the Google form. The Chair advised participants that member status is contingent upon provision of all required information, any missing information having been highlighted (yellow) in the Google document for participant's convenience. Participants were also asked to include their affiliations in parentheses after their name in the Chat window, if using the chat area. A few minutes were allowed for participants to access and complete the sign-in process. The Secretary added the attendance status of participants who did not complete their attendance status directly.

At least two (2) of the most recent four (4) WG meetings must be attended in order to maintain voting rights.

The participant information from the chat window and from the participant registration document has been merged and may be found in **Attachment A**.

3. Approval of Agenda and Previous Meeting Minutes

The Chair displayed the announced agenda, confirmed with the Secretary that a quorum existed, and proceeded with approval of the September 19th meeting agenda and the minutes for the WG Meeting held on July 11, 2022. Cynthia Burham moved to approve the September 19th meeting agenda and Troy Nagle seconded the motion. Susana Palma moved for approval of the July 11th meeting minutes and Cynthia Burham seconded the motion. Both the agenda and minutes were approved without objection to unanimous consent. 17 voting members were required to be in attendance to achieve quorum. There were 17 voting members in attendance when approval was requested. A total of 26 voting members attended the meeting.

4. IEEE Patent & Copyright Policies

a. Call for Patents

<https://development.standards.ieee.org/myproject/Public/mytools/mob/sli/deset.pdf>

Per standard IEEE-SA WG meeting practice, the Chair reviewed the required policy regarding potentially essential patents. No one raised concerns for consideration.

b. Copyright Policy

<https://standards.ieee.org/ipr/copyright-materials.html>

Per standard IEEE-SA WG meeting practice, the Chair reviewed the required policy regarding copyrights. There were no questions or concerns.

5. Technical Presentation(s) and Discussion

The Chair opened discussion with an update on funding opportunities. An opportunity to receive between 15k and 120k GBP for a 3-to-6-month project is available for a UK-based business (partnering with NPL) with a functional product or service through A4i (Analysis for Innovators). The next funding round (round 9) will open in a few months. The Chair asked WG members to consider whether they might qualify or know of a business which may qualify to apply for this funding opportunity so that work might begin to apply for the opportunity to support WG standardization efforts by covering standard odor cylinder development costs.

After the funding opportunity update, the Chair introduced the presenter for the September 19th 2022 WG Meeting.

a. *Presentation by Francois Loubet*

Francois Loubet is a representative of Ellona.io, a company that develops, manufactures, and sells air quality and pollution monitoring instruments for indoor and outdoor environments. The presentation covered techniques and methodologies implemented by Ellona for odor intensity training, measurement, detection, and classification. A case study was provided explaining how the company collects samples in the field and uses dilution to train instruments. A dynamic process is conducted as much in parallel as feasible with the instrument training process and resulting data merged to produce a model predicting the odor level of unknown samples. Correlation of results and relative error were discussed.

b. *General Discussion:*

During the Q&A session following the main presentation questions arose regarding linearity of instrument response and linearity of the odor pattern. Linearity is often sensor dependent and algorithms are used to establish a form of linearity. The result is sensor dependent and processing is often necessary to produce a sense of linearity.

A key point of discussion was the importance of defining the concept of an odor unit, the fact that an e-nose system would have to use an equivalent odor unit, and the complexity involved in establishing the value and validity of this equivalent odor unit. The importance of humidity and temperature to this question were also discussed. The issue is not a simple one to resolve and deserves additional discussion. The importance of a protocol to be used across companies was also discussed as a way to at least ensure similarity in response between various instrument producers.

Additional questions addressed the number of training sessions required before correlation/ R^2 stabilization for Ellona systems. Much depends on the complexity of the system involved and differs between systems. Another question centered upon the appropriate focus between application and chemicals in developing a test odor. The question requires thoughtful consideration as it turns on a number of issues and is not simple to resolve. The efficiency of using single-material cylinders mixed in lab was mentioned as an effective method to reduce costs as

cylinders including mixed materials may degrade or otherwise involve additional cost to produce.

After the Q&A session, the Chair mentioned the NOSE 2022 proceedings and indicated that program information was available online. A WG member who attended NOSE 2022 provided a link to the program:

<https://www.aidic.it/nose2022/programma/pro.html>

6. Unfinished Business/Action Item Review

There was no unfinished business.

7. New Business

There was no new business.

8. Future Meetings

The next meeting of the WG is presently scheduled to occur at 10 AM EDT on October 10, 2022 and the next following meeting is scheduled at the same time on November 14th.

9. Adjourn

The WG Chair adjourned the meeting at 11:11 AM ET.

Attachment A: Meeting Participants (29)

Last Name	First Name	Affiliation
Alam	Md Faizul	TBD
Burham	Cynthia	University of Texas at Austin
Carneiro	Magnovaldo	Self
Chen	Allen C	Self
Danesh	Ehsan	Adsentec Ltd
De Vito	Saverio	ENEA - Agency for New Technology, Energy and Sustainable Economic Environment
Gami	Hirenkumar	Miami University – OH
Guillot	Jean-Michel	IMT Mines Ales
Herrier	Cyril	Aryballe
Isz	Sandrine	Alpha MOS
Izquierdo	Cyntia	Olores.org website - Ambiente et Odora
Kuna	Kishore	Honeywell Technology Solutions
Li	Hua-Yao	Huazhong University of Science and Technology
Lozano	Jesus	Universidad de Extremadura
Manjula	Raja	SRM University AP
Mulla	Mohammad Yusuf	Research Institutes of Sweden (RISE)
Nagle	Troy	ECE, NC State University
Palma	Susana	NOVA university of Lisbon
Peaslee	David	SPEC Sensors, LLC
Petrache	Ana	BEIA Consult
Potyrailo	Radislav	GE Research
Reimringer	Wolfhard	3S - Sensors, Signal Processing, Systems GmbH
Romain	Anne-Claude	University of Liege
Sabry	Yasser	Faculty of Engineering, Ain Shams University
Saffell	John	NosmoTech Ltd.
Schiffman	Susan	North Carolina State University
Srinkath	Kavirayani	Gayatri Vidya Parishad College of Eng (Autonomous), Visakhapatnam
Suciu Jr.	George	Beia RO
Loubet	Francois	Ellona