

N°4

September 2017



The BET equipment

Summary

- The additive manufacturing offer
- The Nanosafety Workshops 2017
- Focus on personal monitors and samplers
- Agenda

"The BET measurement (based on Brunauer, Emmett and Teller theory) is a very good way to obtain information about a nanomaterial. The treatment of the adsorption isotherm gives the specific surface area that allows to deduce a characteristic diameter of the substance. There are various advantages for industrials to use this method: good reproducibility, getting of information about the form and the state of agglomeration/aggregation, a low price of the equipment (around 50 K€) compared to other characterisation methods of nanomaterial."

To go further and obtain information and protocols concerning the BET method you can connect to www.nanomet.fr."

Sébastien ARTOUS, engineer at the Nanosafety Platform

PNS: Launch of a new offer

3D printing & Environmental Health and Safety within PNS and DTNM (Nanomaterials Department) represent a complete offer for a responsible development of additive manufacturing:

- Assistance to the design and development of industrial lines through an HSE prevention approach
- Assessment of industrial lines
- Workstations measurement
- Aging studies for manufactured products
- End of life / recycling
- Training

The main objective is to develop a mix between global approach and process interactions analysis for workers safety to ensure the lowest possible exposure to metallic powder.

Contact.: Samir Derrough
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Edito

The last quarter of 2017 will be full for the PNS thanks to the organisation of different events: an information meeting in Paris in September and the Nanosafety Workshops in November.

In this issue, some tips and links are given to select personal devices to assess occupational exposure to airborne nanomaterials.

We hope this fourth PNS NEWS issue will bring you interesting information !

Gaëlle Charlier, editor in chief

Save the date: information meeting at Paris in september

The health and product risks agency of SOCOTEC and the PNS organize an information meeting about nanomaterials the 28th of September, in Paris.

Nowadays, nanomaterials are part of our daily life: in clothes, in building materials, in food and more and more in current society problems such as urban pollution and waste management for instance.

With the growing share of possible applications, the benefits to use these technologies are often underestimated by societal expectations. But, the different stakeholders of the domain have to take into consideration the societal dimension as it impacts the perception of nanomaterials. Regulation is also moving and companies expect to know how their activity will be impacted.

SOCOTEC & the PNS have decided to organize an information meeting to help companies to adapt their strategy and their product development according to these new points. Some experts of the Nanosafety Platform (PNS) will speak at this meeting and will bring their knowledge and experience.

The program

- Regulation news
- The challenges of societal dimension
- Towards a responsible use of nanomaterials
- Strategy & management

More information: pns@cea.fr

The Nanosafety Workshops 2017

The Nanosafety workshops will be held the 16th of November 2017, at the CEA/ Grenoble.

On a participative mode and in addition with a speed-meeting and a poster session, attendees will take part on 6 different workshops:

Workshop 1: How to use nanomaterials on a safety mode

Workshop 2: Risk assessment in workplaces

Workshop 3: Workers monitoring and development of biological exposure markers

Workshop 4: Nanomaterials, a safer by design approach

Workshop 5: Training and communication, some advices

Workshop 6: Nanomaterials and regulation: What changes?

Attendees will be divided into 6 groups of 20-25 people and everybody will visit each workshop.

To consult the detailed program of this event and to register, please visit the web site :

www.ateliers2017.insight-outside.fr

Contact: ateliers2017@cea.fr

FOCUS ON...

Personal monitors	<i>miniDiSC DiSCmini</i>	<i>nanoTracer</i>	<i>Partector</i>	<i>PUFP C100</i>	<i>PUFP C200</i>	<i>MICROAETH AE51</i>
						
Personal samplers	<i>PGP</i>	<i>NANOBADGE</i>	<i>NRD</i>	<i>TEM PARTECTOR</i>	<i>ESPNANO 100</i>	<i>TPS</i>
						

Selection of personal instruments: monitors and samplers

Assessment of personal exposure to airborne nanomaterials: sampling and/or monitoring?

Exposure to airborne nanomaterials needs to be assessed in view of worker protection. Exposure to airborne particles can best be determined by measuring directly in the personal breathing zone, i.e. within a 30cm hemisphere around mouth and nose, which necessitates the use of personal samplers and monitors.

Such nano-specific personal instruments have only become available in recent years. In the scope of the project nanoIndEx coordinated by Christof Asbach, the capabilities and limitations of the novel personal samplers and monitors were thoroughly studied both in laboratory and during field studies. While samplers are used to collect particles for subsequent gravimetric, chemical and/or morphological analysis, monitors provide information on the airborne lung deposited surface area (LDSA) concentration with high time resolution. Some monitors also provide the number concentration and the mean particle size.

The three-year project taught us numerous lessons on both the performance of the instruments as well as on field studies, which can have a significant impact on future personal exposure assessment.

PERSONAL MONITORING OR SAMPLING: ADVANTAGES?

Personal monitoring and sampling has proven capable of providing relevant and reliable data regarding the individual exposure of workers. In some

cases the personal instruments have proven to be superior to stationary devices, e.g., in cases of high temporal and spatial variability of the workplace aerosol. There might be a certain conflict, however, between monitoring and sampling if very short activities are to be investigated, as limits of detection of certain analytical methods may require longer sampling times than monitoring periods.

On the contrary, samplers could provide more directly mass concentration shift averages with the advantage to enable the identification of specific morphological or chemical features. Consequently, the need for either personal sampling or personal monitoring depends strongly on the task and the question to be tackled. In many practical applications, the combination of personal sampler and monitor will be the best choice.

For more details on measurement techniques, strategies and methods for assessing personal exposure to airborne nanomaterials in workplaces, please refer to C. Asbach et al. Science of the Total Environment 603–604 (2017) 793–806.



You can consult online the nanoIndEx Guidance Document by clicking [here](#).

PORTRAIT...

Nanosafety trainings provided by the INSTN

The National Institute for Nuclear Science and Technology provides different trainings in relation with nanosafety issues. We identify two of them for you:

The INSTN is a public higher education institution administered by the CEA (*French Atomic Energy and Alternative Energies commission*). For 60 years now, its mission has been to transmit knowledge and know-how developed by the CEA and its industrial partners by contributing to developing human resources required by research and industry, at any level of qualification, from operator to researcher.

ABOUT THE INSTN

NANOMATERIAL RISK CONTROL - AWARENESS

Objectives: identify the potential « nano » risks related to nanomaterials, whatever the training at the workstation. Apply the safety instructions. Adopt the good behavior in deteriorated situations.

Target: staff in contact with nanomaterials in the research phase, formulation, production, maintenance, cleaning... Safety engineers, facility managers, heads of laboratories where are manipulated nanoparticles. Exposed personnel.

NANOMATERIAL POTENTIAL RISK CONTROL FOR PREVENTIONISTS - NANOPREV (INDIVIDUAL CERTIFICATION - INERIS)

Objectives: identify and evaluate the potential risks related to operations carried out as part of missions. Organize the preservation of health and the worker safety.

Target: every people who realize workstation measurements about nanomaterials and who are looking for establish some guidelines of good practices.

Consult the [website](#) for more details.

Please note that "A la carte" training sessions are possible. To anticipate some change in training sessions, please consult the INSTN website regularly: www-instn.cea.fr

For more information: instn.grenoble@cea.fr

CONTACT & ADVERTISING

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AGENDA

IMBG 2017

7th International Meeting on Metallic Nanoparticles: Health, Environment, applications and Safer-by-Design

09/11/2017 - 09/15/2017

Villard-de-Lans, France

www.imbg2017.sciencesconf.org



The PNS will be present during this conference. Visit us at our booth !

Consult on the INSTN website, all the training courses in relation with nanosafety

www-instn.cea.fr

Next NanoPREV session

10-12 October, 2017

Grenoble

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PNS News is edited by CEA Tech/PNS

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Photo credit: Utopik Photos