



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*

# **Technical Meeting on New Trends and Advances in Microdosimetry and its Applications**

**IAEA Headquarters  
Vienna, Austria**

**05–09 October 2020**

**Ref. No.: EVT1904203**

## **Information Sheet**

### **Introduction**

Microdosimetry is the subfield of radiation physics that regards the systematic study of the spatial and temporal distribution of the absorbed energy in microscopic structures within the irradiated matter, which are stochastic by nature. Although it originated more than sixty years ago, microdosimetry is still attracting high scientific interest nowadays in radiation medicine, radiation protection, radiation biology and other fields such as space research.

In the field of radiation medicine, microdosimetry is particularly relevant for ion beam therapy, which is one of the most promising techniques to cure a number of tumors minimizing the damage on healthy tissue. In this medical application of ionizing radiation as well as in radiation protection, the conventional measurement of the absorbed dose is not sufficient to explain the biological effects of the radiation in the human body such as the variation of radiobiological effectiveness along the path of a clinical ion beam.

In radiation protection and in a number of modalities in radiation medicine, therefore, weighting factors are applied to the conventional dosimetric quantity absorbed dose in order to account for the biological effectiveness of the particular radiation quality. Examples include proton and ion beams, neutrons as well as kilovolt X-rays as used in brachytherapy. Micro- and nanodosimetry (also known as structural microdosimetry, the extension of microdosimetry to smaller dimensions), have been developed to provide radiation quantities that capture the influence of the stochastic nature of radiation interactions and, hence, the properties of different radiation qualities responsible for their different relative biological effectiveness.

## **Objectives**

The aim of the Technical Meeting is to gather up-to-date information and status of the field of microdosimetry, and in particular experimental microdosimetry, in order to enhance and boost the research and applications of microdosimetry in IAEA Member States. The main topics/focus will concern the current state of the art of development of microdosimeters and instrumentation, computational tools, methodology used in microdosimetry, non-clinical use of detectors as well as future perspectives and demands.

A key aspect of the technical meeting is the harmonization toward univocal procedures and formalisms. Instrumental in this process is the possibility of sharing raw data from experiments and simulations on an open-access basis. The international experts will be encouraged to discuss and propose initiatives to share their raw data with the community.

### **The topics to be covered during the meeting:**

#### **Introductory concepts**

- Radiation quality in Radiation Protection and in Radiation Therapy
- Microdosimetric and nanodosimetric
- approach Instrumentational and computational tools

#### **Developments and instrumentation**

#### **Computational tools**

#### **Non-clinical use of detectors**

#### **Outlook, Perspectives, and Demands**

## **Target Audience**

The event is intended for individuals from Member States that are involved in the field of microdosimetry through development, simulation or use.

## **Working Language(s)**

English

## Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **26 June 2020**. Participants who are members of an organization invited to attend are requested to send the **Participation Form (Form A)** through their organization to the IAEA by above deadline.

In addition, persons wishing to participate are invited to submit a one-page abstract addressing one or more of the topics listed above. The Scientific Secretaries will assess eligibility based on the contents of the abstract.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

Please note that the IAEA is in a transition phase to manage the entire registration process for all regular programme events electronically through the new InTouch+ (<https://intouchplus.iaea.org>) facility, which is the improved and expanded successor to the InTouch platform that has been used in recent years for the IAEA's technical cooperation events. Through InTouch+, prospective participants will be able to apply for events and submit all required documents online. National authorities will be able to use InTouch+ to review and approve these applications. Interested parties that would like to use this new facility should write to: [InTouchPlus.Contact-Point@iaea.org](mailto:InTouchPlus.Contact-Point@iaea.org).

## Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made using the **Grant Application Form (Form C)** which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the **Participation Form (Form A)** by **26 June 2020**.

## Venue

The event will be held in IAEA Laboratories in Seibersdorf. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced

rate for IAEA participants, are listed on the following IAEA web page:  
<http://www-pub.iaea.org/iaeaevents/GeneralInfo/Guide/VIC>.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

## **Visas**

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

## **Organization**

### **Scientific Secretary**

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on other matters related to the event to the Administrative Secretary.