

EPJ N Special Issue: From absorbed dose to nuclear heating rate: Instrumentation, measurement, and modeling for energy deposit quantification

Guest Editors: Christelle Reynard-Carette, Abdallah Lyoussi, Gordon Kohse and Gilles Moutiers.

Submissions are invited for a Topical Issue of EPJ N on “From absorbed dose to nuclear heating rate: Instrumentation, measurement, and modeling for energy deposit quantification”.

Scope Description:

The energy deposition induced by interactions between radiation and matter represents one of the key quantities in the nuclear field. The intensity of this quantity depends on the nuclear environment and application (Environmental and Medical sciences, Spent fuel and radioactive waste management, Decommissioning, Research reactors...).

Consequently, this quantity can range from very low absorbed doses, in the case of radiation protection, to very high absorbed doses leading to an increase in temperature (also called the nuclear heating rate) in the case of research reactors providing intense radiation fluxes such as Material Testing Reactors (MTRs).

For each environment, specific sensor technologies based on dedicated physics principles are required to quantify this key parameter. Design, characterization, calibration, behavior prediction, and qualification of instrumentation are crucial steps towards proposing new accurate, sensitive, reliable measurement methods and solutions for harsh conditions. The purpose of this special issue is to highlight the latest experimental, theoretical and modeling advances in innovative instrumentation, calibration methods, and measurement methods from non-nuclear laboratory conditions to real nuclear environments.

Topics to be covered include, but are not limited to:

- Dosimeter
- Thermoluminescent dosimeter (TLD)
- Optically stimulated luminescent dosimeter (OSLD)
- Heat-flow calorimeter
- In-pile differential or single-cell calorimeter
- ...

Types of acceptable manuscripts:

Original research papers and reviews (state-of-the-art or work within the framework of collaborative projects) on the topic “From absorbed dose to nuclear heating rate: Instrumentation, measurement and modeling for energy deposit quantification” are welcome.

We invite contributors to communicate their intention to submit manuscripts for this Topical Issue to the Guest Editors as soon as possible. We refer you to the journal’s instructions for authors to provide some guidance on how to prepare your article. The full manuscripts should be submitted before the deadline directly to the EPJ N Editorial Office via <https://articlestatus.edpsciences.org/is/epjn/home.php>.

Deadline for submission: 31 March 2023.

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