



# Physikalisches Kolloquium

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## **Molecular-level ionizing-radiation matter interactions and their consequences**

The interaction between ionizing electromagnetic radiation and dense matter and processes following an initial ionization event are fundamental to a variety of important challenges in society and science. If those processes would be fully understood, this could be the basis to develop measures to avoid or cure hazardous effects due to ionizing-radiation exposure of biologically relevant systems, to develop treatments for diseases occurring as consequences of such processes in living entities, or, in a completely different field of science, to understand fundamental processes in astrochemistry. In the presentation I will show how spectroscopy of dispersed fluorescence, electrons and by multi-coincidence methods upon ionization by monochromatized synchrotron and free-electron laser radiation can be used to clarify and quantify those fundamental processes. By increasing the complexity of the investigated systems stepwise from photoionization and photodissociation processes of individual atoms or molecules over processes occurring in clusters towards processes occurring in liquids my group tries to investigate how processes essentially known to us in individual molecules may be changed and which other processes may occur when those molecules are embedded in (approximately) realistic environments.

**Tuesday, December 13, 2022, 2:15 p.m.**